ENERGY, MINES AND RESOURCES CANADA
CANADA CENTRE FOR MINERAL AND ENERGY TECHNOLOGY
NATIONAL URANIUM TAILINGS PROGRAM

FINAL REPORT
FOR

COST STUDY ON WASTE MANAGEMENT AT THREE MODEL CANADIAN URANIUM MINES

CAPITAL COSTS - ESTIMATE DETAILS

MARCH, 1984

KILBORN (SASKATCHEWAN) LTD.
MELIS CONSULTING ENGINEERS LTD.

REQ. NO. 3-1653

CONTRACT REPORT NO. OSQ83-00232

COST STUDY ON WASTE MANAGEMENT

AT

THREE MODEL CANADIAN URANIUM MINES

CAPITAL COST ESTIMATE DETAILS

prepared for

DEPARTMENT OF ENERGY, MINES AND RESOURCES

CANADA CENTRE FOR MINERAL AND ENERGY TECHNOLOGY

NATIONAL URANIUM TAILINGS PROGRAM

by

KILBORN (SASKATCHEWAN) LTD.
and
MELIS CONSULTING ENGINEERS LTD.

JUL 30 1984
MICROMEDIA

108pp

March, 1984

Saskatoon, Canada

COST STUDY ON WASTE MANAGEMENT

AT

THREE MODEL CANADIAN URANIUM MINES

CAPITAL COST ESTIMATE DETAILS

1.0 Model A Capital Cost Estimate Details

2.0 Model B Capital Cost Estimate Details

3.0 Model C Capital Cost Estimate Details

1.0 MODEL A CAPITAL COST ESTIMATE DETAILS

KILBORN (SASKATCHEWAN) LTD.

PROJECT SUMMARY

RUN : 28 MAR 84
TIME: 12:40

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

AREA	DESCRIPTION	LABOR MNHRS	LABOR COST	MATERIAL H.O.	MATERIAL FIELD	MATERIAL TOTAL	TOTAL COST
321	MINE WATER TREATMENT	53,048	1,856,678	2,631,414	567,647	3,199,061	5,055,739
322	MILL EFFLUENT TREATMENT	82,612	2,891,419	3,993,221	1,182,202	5,175,423	8,066,842
323	LIMESTONE CIRCUIT	1	22		-22	-22	0
324	LIME CIRCUIT	-0	-7	-1	8	8	0
32-		135,660	4,748,111	6,624,635	1,749,835	8,374,470	13,122,581*
331	TAILINGS LINE	2,777	97,178	474,600	142,633	617,233	714,411
332	TAILINGS STORAGE BASIN				5,721,494	5,721,494	5,721,494
333	TAILINGS DECANT TREATMENT	6,242	218,459	298,226	2,429,450	2,727,676	2,946,136
334	MONITORING	1,572	55,020	180,021	21,600	201,621	256,641
33-		10,590	370,657	952,847	8,315,177	9,268,024	9,638,681*
3--		146,251	5,118,768	7,577,482	10,065,012	17,642,494	22,761,262*
900	CONST.INDIRECTS, E.P.C.M. & CONTINGENCY	46,450	1,625,750	4,052,400	2,224,000	6,276,400	7,902,150
---		192,701	6,744,518	11,629,882	12,289,012	23,918,894	30,663,412*
PROJECT TOTAL		192,701	6,744,518	11,629,882	12,289,012	23,918,894	30,663,412*

KILBORN (SASKATCHEWAN) LTD.

AREA/CLASS MATRIX

RUN : 28 MAR 84

PROJECT: 5239-15

RUN NO. P08

TIME: 12:42

NUTP WASTE MANAGEMENT COST STUDY MODEL A

AREA	DESCRIPTION	SITEWORK & IMPROVEMNTS (.1---)	BUILDINGS (.2---)	EQUIPMENT GENERAL (.3---)	MECH EQUIP PROCESS (.4---)	PROCESS PIPING (.5---)	ELECTRICAL POWER (.6---)	INSTRU-MENTATION (.7---)	TRANSFERS (.8---)	AREA TOTAL
321	MINE WATER TREATMENT		2,333,664		1,378,407	275,680	275,670	137,855	654,463	5,055,739
322	MILL EFFLUENT TREATMENT		2,023,974		1,993,585	398,711	398,718	199,358	3,052,496	8,066,842
323	LIMESTONE CIRCUIT		1,518,480		1,626,588	325,322	325,303	162,663	-3,958,356	0
324	LIME CIRCUIT		1,780,218		796,407	159,260	159,265	79,645	-2,974,794	0
331	TAILINGS LINE	682,874						31,537		714,411
332	TAILINGS STORAGE BASIN	5,721,494								5,721,494
333	TAILINGS DECANT TREATMENT	2,304,288	255,003		158,114	31,720	121,695	15,815	59,501	2,946,136
334	MONITORING	31,645	89,996		135,000					256,641
	TOTAL DIRECTS	8,740,301	8,001,334		6,088,100	1,190,693	1,280,651	626,873	-3,166,690	22,761,262

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

RUN : 28 MAR 84
TIME: 12:03

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINE WATER TREATMENT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	23360	CM	1.14	26,630	35	932,064	60.00	1,401,600			1,401,600	2,333,664
4630	1	THICKENER U/F PUMP 150MM	1	LS						32,000			32,000	32,000
4630	2	LAUNDER - THICKENER U/F PUMP	1	LS						2,000			2,000	2,000
4630	5	MINEWATER SLUDGE PUMP 75MM.X 40MM	1	LS						3,500			3,500	3,500
4630	10	MINEWATER FLOCCULANT TRANSFER PUMP 50MM X 50MM	1	LS						2,950			2,950	2,950
4630	15	MINEWATER FLOCCULANT METERING PUMPS	2	EA					1,770.00	3,540			3,540	3,540
4630	16	FLOCCULANT FLOWMETER	1	LS						500			500	500
4630										44,490			44,490	44,490*
4640	1	SUMP PUMPS 50MM	2	EA					3,500.00	7,000			7,000	7,000
4650	1	MINEWATER PUMPS 150MM X 100MM	2	EA					3,860.00	7,720			7,720	7,720

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINE WATER TREATMENT														
4650	2	MOTORS 30HP	2	EA					1,300.00	2,600			2,600	2,600
4650	5	MINEWATER THICKENER O/F PUMPS-150MM.X 100MM	2	EA					3,860.00	7,720			7,720	7,720
4650	6	MOTOR - 40HP	2	EA					2,200.00	4,400			4,400	4,400
4650										22,440			22,440	22,440*
46--										73,930			73,930	73,930*
4820	1	MINEWATER STORAGE TANKS 15000MM DIA.X 20000MM (2 REQ'D)	151340	KG					2.80	423,752			423,752	423,752
4820	2	EPOXY LINING	151	TN	5.71	862	35	30,177			200.00	30,200	30,200	60,377
4820	5	PRECIPITATION TANKS 6000MM DIA.X 6000MM (2 REQ'D)	25730	KG					2.80	72,044			72,044	72,044
4820	6	AGITATORS	2	EA					27,370.00	54,740			54,740	54,740
4820	7	MOTORS-30HP	2	EA					1,300.00	2,600			2,600	2,600
4820	8	RUBBER LINING TANKS	292	SM	3.85	1,124	35	39,347			135.00	39,420	39,420	78,767

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

RUN : 28 MAR 84
TIME: 12:03

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINE WATER TREATMENT														
4820	10	HIGH RATE THICKENER 10670MM DIA. C/W RAKE DRIVE,DEARATOR,AUTO LIFT	1	LS						215,350			215,350	215,350
4820	11	EPOXY LINING TANK	12	TN	10.51	126	35	4,414			200.00	2,400	2,400	6,814
4820	15	MINEWATER THICKENER O/F PUMP BOX 2000MM DIA. X 2800MM HIGH	730	KG					4.70	3,431			3,431	3,431
4820	20	THICKENER U/F PUMPBOX 1500MM DIA X 2300MM HIGH	640	KG					4.70	3,008			3,008	3,008
4820	25	MINEWATER FLOCCULANT STOCK TANK 2000MM DIA.X 2500MM	900	KG					4.70	4,230			4,230	4,230
4820	26	ASPIRATOR	1	LS						200			200	200
4820	30	MINEWATER FLOCCULANT DAY TANK 4000MM DIA. X 4000MM	3060	KG					2.80	8,568			8,568	8,568
4820						2,113		73,939		787,923		72,020	859,943	933,882*
4910	1	FIELD MATERIAL 10% OF H. O. MATERIAL	1	LS								86,185	86,185	86,185
4920	1	MECHANICAL INSTALLATION 33% OF H. O. MATERIALS	1	LS		8,126	35	284,410						284,410
49--						8,126		284,410				86,185	86,185	370,595*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINE WATER TREATMENT														
4---						10,239		358,349		861,853		158,205	1,020,058	1,378,407*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		4,726	35	165,410				110,270	110,270	275,680
6000	1	ELECTRICAL-20% OF INSTALLED MECHANICAL	1	LS		3,938	35	137,830				137,840	137,840	275,670
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH	1	LS		985	35	34,475				103,380	103,380	137,855
8000	1	CREDIT FROM LIME CIRCUIT (AREA 324) OF 22%	1	LS		6,530	35	228,550		367,961		57,952	425,913	654,463
AREA 321 TOTAL						53,048		1,856,678		2,631,414		567,647	3,199,061	5,055,739*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	20260	CM	1.14	23,096	35	808,374	60.00	1,215,600			1,215,600	2,023,974
4190	1	TAILINGS SAMPLER	1	LS						7,080			7,080	7,080
4440	5	BRIDGE CRANE - TAILINGS NEUTRALIZATION AREA 2.5 TONNE	1	LS						77,500			77,500	77,500
4610	1	AIR COMPRESSOR -2000CM/H 414KPA C/W 300HP MOTOR & FULL VOLTAGE STARTER	2	EA					67,780.00	135,560			135,560	135,560
4630	1	TAILINGS PUMPS 300MM X 250MM	6	EA					14,660.00	87,960			87,960	87,960
4630	2	MOTORS 175HP	6	EA					12,000.00	72,000			72,000	72,000
4630	3	VARISPEED MOTOR CONTROLS	2	EA					59,000.00	118,000			118,000	118,000
4630	15	GLAND WATER PUMPS 75MM X 50MM	2	EA					2,540.00	5,080			5,080	5,080
4630	16	MOTORS 40HP	2	EA					2,200.00	4,400			4,400	4,400
4630										287,440			287,440	287,440*

PROJECT: S239-15 RUN NO. P08
NUTP WASTE MANAGEMENT COST STUDY MODEL A

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4640	5	SUMP PUMP - TAILINGS NEUTRALIZATION AREA 75MM	1	LS						4,470			4,470	4,470
4640	6	MOTOR 25 HP	1	LS						1,120			1,120	1,120
4640										5,590			5,590	5,590*
46--										428,590			428,590	428,590*
4820	1	TAILINGS JUNCTION BOX	900	KG					4.70	4,230			4,230	4,230
4820	2	RUBBER LINING - JUNCTION BOX	18	SM					170.00	3,060			3,060	3,060
4820	5	NEUTRALIZATION PACHUCA TANKS 10000MM DIA.X 20000MM (3-REQ'D)	212050	KG					2.80	593,740			593,740	593,740
4820	6	RUBBER LINING	1734	SM	3.84	6,659	35	233,050			135.00	234,090	234,090	467,140
4820						6,659		233,050		601,030		234,090	835,120	1,068,170*
4910	1	FIELD MATERIAL 10% OF H. O. MATERIAL	1	LS								111,420	111,420	111,420
4920	1	MECHANICAL INSTALLATION 27% OF H. O. MATERIAL	1	LS		8,595	35	300,825						300,825
49--						8,595		300,825				111,420	111,420	412,245*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15

NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

RUN : 28 MAR 84
TIME: 12:03

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4---						15,254		533,875		1,114,200		345,510	1,459,710	1,993,585*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH	1	LS		6,835	35	239,225				159,486	159,486	398,711
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		5,696	35	199,360				199,358	199,358	398,718
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH	1	LS		1,424	35	49,840				149,518	149,518	199,358
8000	1	CREDIT FROM LIME CIRCUIT (AREA 324) OF 76%	1	LS		22,557	35	789,495		1,271,140		200,195	1,471,335	2,260,830
8000	2	CREDIT FROM LIMESTONE CIRCUIT(AREA 323) OF 20%	1	LS		7,750	35	271,250		392,281		128,135	520,416	791,666
8000						30,307		1,060,745		1,663,421		328,330	1,991,751	3,052,496*
AREA 322 TOTAL						82,612		2,891,419		3,993,221		1,182,202	5,175,423	8,066,842*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	15200	CM	1.14	17,328	35	606,480	60.00	912,000			912,000	1,518,480
4100	1	LIMESTONE BALL MILL 2250MM.DIA X 3500MM	1	LS						228,680			228,680	228,680
4100	2	MOTOR-300HP	1	LS						26,000			26,000	26,000
4100	3	CHUTE- DISCHARGE	1	LS						2,000			2,000	2,000
4100										256,680			256,680	256,680*
4180	1	LIMESTONE VIBRATING FEEDER	1	LS						4,130			4,130	4,130
4180	5	SLOT FEEDER 610MM	1	LS						7,115			7,115	7,115
4180										11,245			11,245	11,245*
41--										267,925			267,925	267,925*
4220	1	PRIMARY CYCLONE 400MM DIA.	1	LS						2,900			2,900	2,900
4220	5	SECONDARY CYCLONES 150MM DIA.	2	EA					1,800.00	3,600			3,600	3,600
4220										6,500			6,500	6,500*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
4410	1	LIMESTONE BIN FEED BELT CONVEYOR 915MM (55M C/C PULLEYS)	1	LS						66,550			66,550	66,550
4410	2	MOTOR 20HP	1	LS						900			900	900
4410	3	DISCHARGE CHUTE	1	LS						2,000			2,000	2,000
4410	5	LIMESTONE BIN DISCHARGE BELT CONVEYOR 457MM (30M C/C PULLEYS)	1	LS						33,125			33,125	33,125
4410	6	BELT SCALE	1	LS						17,900			17,900	17,900
4410	7	DISCHARGE CHUTE	1	LS						2,000			2,000	2,000
4410										122,475			122,475	122,475*
4420	1		1	EA										0
4440	1	BRIDGE CRANE - LIMESTONE AREA - 10 TONNE	1	LS						119,600			119,600	119,600
44--										242,075			242,075	242,075*
4630	1	LIMESTONE SLURRY PUMPS 150MM X 100MM	2	EA					12,100.00	24,200			24,200	24,200

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
4630	2	MOTORS 30HP	2	EA					1,300.00	2,600			2,600	2,600
4630	5	PRIMARY CYCLONE FEED PUMP 100MM X 75MM	1	LS						12,100			12,100	12,100
4630	6	MOTOR 50 HP	1	LS						2,900			2,900	2,900
4630	10	SECONDARY CYCLONE FEED PUMP 100MM X 75MM	1	LS						8,575			8,575	8,575
4630	11	MOTOR 50HP	1	LS						2,900			2,900	2,900
4630	15	SECONDARY CYCLONE O/F PUMP 100MM X 75MM	1	LS						8,575			8,575	8,575
4630	16	MOTOR - 20HP	1	LS						900			900	900
4630										62,750			62,750	62,750*
4640	1	LIMESTONE AREA SUMP PUMP 50MM	2	EA					3,500.00	7,000			7,000	7,000
4640	5	TRUCK DUMP AREA SUMP PUMP 50MM	1	LS						3,500			3,500	3,500
4640										10,500			10,500	10,500*
46--										73,250			73,250	73,250*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
4810	1	LIMESTONE STORAGE BIN 350 TONNES	20480	KG					2.80	57,344			57,344	57,344
4810	2	TANK INSULATION	1	LS						14,125			14,125	14,125
4810	3	TANK STEAM HEATING COILS	1	LS						8,000			8,000	8,000
4810										79,469			79,469	79,469*
4820	10	LIMESTONE STORAGE TANKS 10000MM DIA. X 12000MM (2-REQD)	78780	KG					2.80	220,584			220,584	220,584
4820	11	RUBBER LINING	896	SM	3.84	3,441	35	120,422			135.00	120,960	120,960	241,382
4820	12	AGITATORS	2	EA					51,870.00	103,740			103,740	103,740
4820	13	MOTORS 75HP	2	EA					4,300.00	8,600			8,600	8,600
4820	15	PRIMARY CYCLONE FEED PUMPBOX 1500MM DIA.X 2000MM	720	KG					4.70	3,384			3,384	3,384
4820	16	RUBBER LINING	14	SM					172.00	2,408			2,408	2,408
4820	20	SECONDARY CYCLONE FEED PUMPBOX 1250MM DIA.X 2000MM	555	KG					4.70	2,609			2,609	2,609

PROJECT: S239-15 RUN NO. P08
NUTP WASTE MANAGEMENT COST STUDY MODEL A

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
4820	21	RUBBER LINING	11	SM					172.00	1,892			1,892	1,892
4820	25	SECONDARY CYCLONE O/F PUMPBOX 1250MM DIA X 2000MM	555	KG					4.70	2,609			2,609	2,609
4820	26	RUBBER LINING	11	SM					172.00	1,892			1,892	1,892
4820						3,441		120,422		347,717		120,960	468,677	589,099*
4840	1	LIMESTONE DUMP HOPPER C/W LINERS	4900	KG					4.70	23,030			23,030	23,030
4850	1	PRIMARY & SECONDARY U/F LAUNDER	1	LS						2,000			2,000	2,000
4850	2	RUBBER LINING	10	SM					172.00	1,720			1,720	1,720
4850	5	SECONDARY CYCLONE O/F LAUNDER	1	LS						2,000			2,000	2,000
4850	6	RUBBER LINING	5	SM					172.00	860			860	860
4850	10	PRIMARY CYCLONE O/F LAUNDER	1	LS						2,000			2,000	2,000
4850	11	RUBBER LINING	5	SM					172.00	860			860	860
4850										9,440			9,440	9,440*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

RUN : 28 MAR 84
TIME: 12:03

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
48--						3,441		120,422		459,656		120,960	580,616	701,038*
4910	1	FIELD MATERIAL-10% OF H.O. MATERIAL	1	LS								104,940	104,940	104,940
4920	1	MECHANICAL INSTALLATION 22% OF H. O. MATERIAL	1	LS		6,596	35	230,860						230,860
49--						6,596		230,860				104,940	104,940	335,800*
4---						10,037		351,282		1,049,406		225,900	1,275,306	1,626,588*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH	1	LS		5,577	35	195,195				130,127	130,127	325,322
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		4,647	35	162,645				162,658	162,658	325,303
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH	1	LS		1,162	35	40,670				121,993	121,993	162,663
8000	1	CREDIT TO MILL EFFLUENT TREATMENT (AREA 322) OF 20%	-1	LS		-7,750	35	-271,250		-392,281		-128,135	-520,416	-791,666

NUTP WASTE MANAGEMENT COST STUDY MODEL A

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIMESTONE CIRCUIT														
8000	2	CREDIT TO PRODUCTION CAPITAL COST OF 80%	-1	LS		-31,000	35	-1,085,000		-1,569,125		-512,565	-2,081,690	-3,166,690
8000						-38,750		-1,356,250		-1,961,406		-640,700	-2,602,106	-3,958,356*
AREA 323 TOTAL						1		22				-22	-22	0*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - LIME CIRCUIT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	17820	CM	1.14	20,315	35	711,018	60.00	1,069,200			1,069,200	1,780,218
4100	5	LIME BALL MILL 1250MM DIA X 2000MM	1	LS						98,575			98,575	98,575
4100	6	MOTOR 100 HP	1	LS						5,500			5,500	5,500
4100	7	CHUTE-DISCHARGE	1	LS						2,000			2,000	2,000
4100										106,075			106,075	106,075*
4180	1	LIME SILO BIN ACTIVATOR	1	LS						19,000			19,000	19,000
41--										125,075			125,075	125,075*
4240	1	LIME SILO DUST COLLECTOR	1	LS						3,000			3,000	3,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - LIME CIRCUIT														
4420	1	LIME SILO DISCHARGE SCREW CONVEYOR	1	LS						13,800			13,800	13,800
4420	2	CHUTE-DISCHARGE	1	LS						2,000			2,000	2,000
4420										15,800			15,800	15,800*
4630	5	MILL DISCHARGE PUMPS 100MM X 75MM	2	EA					8,650.00	17,300			17,300	17,300
4630	6	MOTORS-25HP	2	EA					1,120.00	2,240			2,240	2,240
4630	10	LIME SLURRY DISCHARGE PUMPS 100MM X 75MM	2	EA					8,650.00	17,300			17,300	17,300
4630	11	MOTORS - 25HP	2	EA					1,120.00	2,240			2,240	2,240
4630										39,080			39,080	39,080*
4640	1	LIME AREA SUMP PUMP 50MM	1	LS						3,500			3,500	3,500
46--										42,580			42,580	42,580*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - LIME CIRCUIT														
4810	5	LIME STORAGE SILO-350TNS 7000MM DIA. X 8000MM	14430	KG					2.80	40,404			40,404	40,404
4810	6	CHUTE-DISCHARGE	1	LS						2,000			2,000	2,000
4810										42,404			42,404	42,404*
4820	30	LIME SLURRY TANK 10000MM DIA X 12000MM (2 REQ'D)	76780	KG					2.80	220,584			220,584	220,584
4820	31	AGITATORS	2	EA					46,350.00	92,700			92,700	92,700
4820	32	MOTOR-75HP	2	EA					4,300.00	8,600			8,600	8,600
4820	35	LIME BALL MILL DISCHARGE PUMPBOX 1250MM DIA.X 2000MM	555	KG					4.70	2,609			2,609	2,609
4820										324,493			324,493	324,493*
4880	1	TANK TRUCK	1	LS						50,000			50,000	50,000
48--										416,897			416,897	416,897*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - LIME CIRCUIT														
4910	1	FIELD MATERIAL 10% OF H.O.MATERIAL	1	LS								60,335	60,335	60,335
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		3,792	35	132,720						132,720
49--						3,792		132,720				60,335	60,335	193,055*
4---						3,792		132,720		603,352		60,335	663,687	796,407*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		2,730	35	95,550				63,710	63,710	159,260
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		2,275	35	79,625				79,640	79,640	159,265
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH.	1	LS		569	35	19,915				59,730	59,730	79,645
8000	1	CREDIT TO MINE EFFLUENT TREATMENT (AREA 322) OF 76%	-1	LS		-22,557	35	-789,495		-1,271,140		-200,195	-1,471,335	-2,260,830
8000	2	CREDIT TO MINE WATER TREATMENT (AREA 321) OF 22%	-1	LS		-6,530	35	-228,550		-367,961		-57,952	-425,913	-654,463

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - LIME CIRCUIT														
8000	3	CREDIT TO TAILINGS DECANT TREATMENT (AREA 333) OF 2%	-1	LS		-594	35	-20,790		-33,451		-5,260	-38,711	-59,501
8000						-29,681		-1,038,835		-1,672,552		-263,407	-1,935,959	-2,974,794*
AREA 324 TOTAL						-0		-7		-1		8	8	0*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 331 - TAILINGS LINE														
1800	1	TAILINGS LINES-SERIES 160 400MM (2 REQD)	4200	M	.540	2,268	35	79,380	113.00	474,600	18.33	76,986	551,586	630,966
1900	1	EMERGENCY TAILINGS SPILL POND	2700	CM	.105	284	35	9,923			15.55	41,985	41,985	51,908
1---						2,552		89,303		474,600		118,971	593,571	682,874*
7000	1	INSTRUMENTATION - 5% OF TAILINGS LINE COST	1	LS		225	35	7,875				23,662	23,662	31,537
AREA 331 TOTAL						2,777		97,178		474,600		142,633	617,233	714,411*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1900	1	PERMANENT ROADWAYS FILL MATERIAL	198600	CM							6.50	1,290,900	1,290,900	1,290,900
1900	2	PERMANENT ROADWAYS COMPACTED GRANULAR FILL	8040	CM							7.30	58,692	58,692	58,692
1900	3	PERMANENT RAODWAYS CLEARING & GRUBBING	121900	HA							0.85	103,615	103,615	103,615
1900	50	MISC.SITE CLEARING & GRUBBING (BORROW PITS)	180000	SM							0.85	153,000	153,000	153,000
1900	51	MISC. SITE CLEARING TAILING POND	293	HA							3,600	1,054,800	1,054,800	1,054,800
1900	55	TEMPORARY ROADS - FILL	56400	CM							6.50	366,600	366,600	366,600
1900	56	TEMPORARY ROADS 150MM COMPACTED GRANULAR FILL	2820	CM							7.30	20,586	20,586	20,586
1900	57	TEMPORARY ROADS CLEARING & GRUBBING	37600	SM							0.85	31,960	31,960	31,960
1900	60	FRESH WATER DIVERSION DITCHES (EXCAVATED MATERIAL)	3616	CM							3.80	13,741	13,741	13,741
1900	65	DRAINING LAKE	1	LS								60,000	60,000	60,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1900	70	MOBILIZE & DEMOBILIZE	1	LS								185,000	185,000	185,000
1900												3,338,894	3,338,894	3,338,894*
1910	5	DYKE NO.1 COMPACTED GRANULAR FILL	60	CM							7.30	438	438	438
1910	6	DYKE NO.1 GRAVEL SHELL	212	CM							14.44	3,061	3,061	3,061
1910	7	DYKE NO. 1 COARSE TILL	705	CM							7.16	5,048	5,048	5,048
1910	8	DYKE NO. 1 LOW PERMEABILITY TILL CORE	1377	CM							9.00	12,393	12,393	12,393
1910	9	DYKE NO.1 RIP RAP	212	CM							15.54	3,294	3,294	3,294
1910	10	DYKE NO.1 SAND & GRAVEL FILTER	466	CM							15.71	7,321	7,321	7,321
1910	11	DYKE NO.1 150MM DIA. DRAIN	23	M							14.50	334	334	334

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD UNT CST	MATERIAL - TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1910	12	DYKE NO.1 CENTRAL COLLECTION SUMP	1	LS								1,500	1,500	1,500
1910	13	DYKE NO.1 -GROUT CURTAIN INCL. GROUT HOLES,PRESS. GROUTING,SAND IN GROUT	1	LS								12,530	12,530	12,530
1910	14	DYKE NO.1 CLEAR & GRUBBING	1200	SM							0.85	1,020	1,020	1,020
1910												46,939	46,939	46,939*
1920	20	DYKE NO.2 150MM COMPACTED GRANULAR FILL	156	CM							7.30	1,139	1,139	1,139
1920	21	DYKE NO.2 GFAVEL SHELL	1663	CM							14.44	24,014	24,014	24,014
1920	22	DYKE NO.2 COARSE TILL	10720	CM							7.16	76,755	76,755	76,755
1920	23	DYKE NO.2 LOW PERMEABILITY TILL CORE	8715	CM							9.00	78,435	78,435	78,435
1920	24	DYKE NO.2 RIP RAP	1663	CM							15.54	25,843	25,843	25,843

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1920	25	DYKE NO.2 SAND & GRAVEL FILTER	4229	CM							15.71	66,438	66,438	66,438
1920	26	DYKE NO.2 150MM DIA. DRAIN	53	M							14.50	769	769	769
1920	27	DYKE NO.2 CENTRAL COLLECTION SUMP	1	LS								1,500	1,500	1,500
1920	28	DYKE NO.2 -GROUT CURTAIN INCL. GROUT HOLES,PRESS. GROUTING,SAND IN GROUT	1	LS								50,630	50,630	50,630
1920	29	DYKE NO.2 CLEARING & GRUBBING	5400	SM							0.85	4,590	4,590	4,590
1920												330,112	330,112	330,112*
1930	35	DYKE NO.3 150MM COMPACTED GRANULAR FILL	300	CM							7.30	2,190	2,190	2,190
1930	36	DYKE NO.3 GRAVEL SHELL	3719	CM							14.44	53,702	53,702	53,702
1930	37	DYKE NO.3 COARSE TILL	106140	CM							7.16	759,962	759,962	759,962

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1930	38	DYKE NO.3 UNSUITABLE EXCAVATION	52750	CM							3.80	200,450	200,450	200,450
1930	39	DYKE NO.3 LOW PERMEABILITY TILL CORE	38611	CM							9.00	347,499	347,499	347,499
1930	40	DYKE NO.3 RIP RAP	3719	CM							15.54	57,793	57,793	57,793
1930	41	DYKE NO.3 SAND & GRAVEL FILTER	12520	CM							15.71	196,689	196,689	196,689
1930	42	DYKE NO.3 150MM DIA. DRAIN	103	M							14.50	1,494	1,494	1,494
1930	43	DYKE NO.3 CENTRAL COLLECTION SUMP	1	LS								1,500	1,500	1,500
1930	44	DYKE NO.3 CONCRETE COLLAR	8	CM							450.00	3,600	3,600	3,600
1930	45	DYKE NO.3 450MM DIA.SCH.40 STEEL DECANT PIPES	540	M							300.00	162,000	162,000	162,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1930	46	DYKE NO.3 -GROUT CURTAIN INCL.GROUT HOLES,PRESS. GROUT,SAND IN GROUT	1	LS								199,550	199,550	199,550
1930	47	DYKE NO.3 CONCRETE DECANT STRUCT.	1	LS								13,000	13,000	13,000
1930	48	DYKE NO.3 CLEARING & GRUBBING	7200	SM							0.85	6,120	6,120	6,120
1930												2,005,550	2,005,550	2,005,550*
19--												5,721,494	5,721,494	5,721,494*
AREA 332 TOTAL												5,721,494	5,721,494	5,721,494*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
1940	1	SETTLING PONDS RIP RAP	6241	CM							15.54	96,985	96,985	96,985
1940	2	SETTLING PONDS 150MM COMPACTED GRANULAR FILL	6104	CM							7.30	44,559	44,559	44,559
1940	3	SETTLING PONDS 400MM DIA. SCH.40 STEEL PIPE C/W YELLOW JACKET	28	M							288.00	8,064	8,064	8,064
1940	4	SETTLING PONDS 300MM DIA. SCH.40 STEEL PIPE C/W YELLOW JACKET	62	M							187.00	11,594	11,594	11,594
1940	5	SETTLING PONDS FILTER MATERIAL	7607	CM							15.71	119,506	119,506	119,506
1940	6	SETTLING PONDS 100MM DIA.DRAIN	372	M							12.00	4,464	4,464	4,464
1940	7	SETTLING POND - "A" 30 MIL. HYPALON LINER	49055	SM							11.08	543,529	543,529	543,529
1940	8	SETTLING PONDS 150MM LINER SAND COVER	13384	CM							15.71	210,263	210,263	210,263

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
1940	9	SETTLING PONDS 300MM LINER GRAVEL COVER	10379	CM							14.44	149,873	149,873	149,873
1940	10	SETTLING PONDS FILL MATERIAL	68580	CM							6.50	445,770	445,770	445,770
1940	11	SETTLING PONDS EXCAVATED MATERIAL	120010	CM							3.80	456,038	456,038	456,038
1940	12	SETTLING PONDS 1500MM DIA. CONCRETE MAN HOLE	1	LS								3,000	3,000	3,000
1940	13	SETTLING PONDS HIGH LEVEL ALARMS	1	LS								5,000	5,000	5,000
1940	14	SETTLING PONDS CLEARING & GRUBBING	109400	SM							0.85	92,990	92,990	92,990
1940	15	SETTLING POND -"B" 300MM LOW PERMEABILITY TILL SEAL	12517	CM							9.00	112,653	112,653	112,653
1940												2,304,288	2,304,288	2,304,288*
2000	1	DECANT TREATMENT BLDG	864	CM	3.31	2,860	35	100,094	167.82	144,996			144,996	245,091

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
2000	2	DECANT TREATMENT BLDG. CONCRETE TANK LINING	604	SM	.114	69	35	2,410			12.42	7,502	7,502	9,912
2000						2,929		102,504		144,996		7,502	152,498	255,003*
4310	1	NEUTRALIZATION TANK AGITATOR	1	LS						18,920			18,920	18,920
4310	2	MOTOR 30HP	1	LS						1,300			1,300	1,300
4310	5	RADIUM PRECIPITATION TANK AGITATOR	1	LS						18,920			18,920	18,920
4310	6	MOTOR 30HP	1	LS						1,300			1,300	1,300
4310	10	SETTLING POND FLOCCULANT MIX TANK AGITATOR	1	LS						11,600			11,600	11,600
4310	11	MOTOR 30HP	1	LS						1,300			1,300	1,300
4310	12	FLOCCULANT MIX TANK ASPIRATOR	1	LS						200			200	200
4310										53,540			53,540	53,540*
4630	1	BARIUM CHLORIDE TRANSFER PUMP 100MM X 75MM	1	LS						2,890			2,890	2,890
4630	5	BARIUM CHLORIDE METERING PUMPS C/W MOTORS	2	EA					1,770.00	3,540			3,540	3,540

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
4630	10	SETTLING POND FLOCCULANT METERING PUMP	1	LS						1,770			1,770	1,770
4630	15	DECANT TREATMENT LIME PUMPS 40MM X 25MM	2	EA					5,690.00	11,380			11,380	11,380
4630										19,580			19,580	19,580*
4640	1	DECANT TREATMENT AREA SUMP PUMP 50MM	1	LS						3,500			3,500	3,500
46--										23,080			23,080	23,080*
4820	10	BARIUM CHLORIDE MIX TANK 3000MM DIA X 3000MM	1829	KG					4.70	8,596			8,596	8,596
4820	11	FEED HOPPER	1	LS						2,000			2,000	2,000
4820	12	AGITATOR C/W MOTOR	1	LS						5,300			5,300	5,300
4820	13	EXHAUST FAN	1	LS						770			770	770
4820	15	BARIUM CHLORIDE STORAGE TANK 3000MM DIA.X 3000MM	1829	KG					4.70	8,596			8,596	8,596
4820	25	DECANT TREATMENT LIME TANK 3000MM DIA X 3000 MM	1829	KG					4.70	8,596			8,596	8,596

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
4820	26	AGITATOR	1	LS						9,300			9,300	9,300
4820										43,159			43,159	43,159*
4910	1	FIELD MATERIAL 10% OF H. O. MATERIAL	1	LS								11,980	11,980	11,980
4920	1	MECHANICAL INSTALLATION 22% OF TOTAL MATERIAL	1	LS		753	35	26,355						26,355
49--						753		26,355				11,980	11,980	38,335*
4---						753		26,355		119,779		11,980	131,759	158,114*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH	1	LS		542	35	18,970				12,750	12,750	31,720
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		451	35	15,765				15,810	15,810	31,595
6000	2	ELECTRICAL - SUPPLY TO DECANT TREATMENT BLDG.	1	LS		860	35	30,100				60,000	60,000	90,100
6000						1,311		45,865				75,810	75,810	121,675*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH	1	LS		113	35	3,955				11,860	11,860	15,815
8000	1	CREDIT FROM LIME CIRCUIT (AREA 324) OF 2%	1	LS		594	35	20,790		33,451		5,260	38,711	59,501
AREA 333 TOTAL						6,242		218,459		298,226		2,429,450	2,727,676	2,946,136*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

RUN : 28 MAR 84
TIME: 12:03

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 334 - MONITORING														
1900	1	DIKE PIEZOMETERS	1	LS		230	35	8,050				14,600	14,600	22,650
1900	2	SAMPLING WELLS	1	LS		57	35	1,995				7,000	7,000	8,995
1900						287		10,045				21,600	21,600	31,645*
2000	1	LABORATORY BLDG.	300	SM	14.28	4,284	35	149,940	500.00	150,000			150,000	299,940
2000	2	CREDIT TO PRODUCTION CAPITAL COST-70%	-1	LS		-2,999	35	-104,965		-104,979			-104,979	-209,944
2000						1,285		44,975		45,021			45,021	89,996*
4000	1	LAB EQUIPMENT	1	LS						450,000			450,000	450,000
4000	2	CREDIT TO PRODUCTION CAPITAL COST - 70%	-1	LS						-315,000			-315,000	-315,000
4000										135,000			135,000	135,000*
AREA 334 TOTAL						1,572		55,020		180,021		21,600	201,621	256,641*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 900 - CONST.INDIRECTS, E.P.C.M. & CONTINGENCY														
9100	1	CONSTRUCTION INDIRECTS	1	LS		23,700	35	829,500				991,500	991,500	1,821,000
9200	1	ENGINEERING, PROCUREMENT AND CONSTRUCTION MANAGEMENT	1	LS						2,731,000			2,731,000	2,731,000
9300	1	SPARE PARTS - 5% OF H.O. MATERIALS	1	LS						562,500			562,500	562,500
9900	1	CONTINGENCY	1	LS		22,750	35	796,250		758,900		1,232,500	1,991,400	2,787,650
9---						46,450		1,625,750		4,052,400		2,224,000	6,276,400	7,902,150*
AREA 900 TOTAL						46,450		1,625,750		4,052,400		2,224,000	6,276,400	7,902,150*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL A

RUN NO. P08

RUN : 28 MAR 84
TIME: 12:03

CLSS ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
TOTAL DIRECTS					192,701		6,744,518		11,629,882		12,289,012	23,918,894	30,663,412*
TOTAL DIRECTS AND INDIRECTS					192,701		6,744,518		11,629,882		12,289,012	23,918,894	30,663,412*
CONTINGENCY													0*
PROJECT TOTAL					192,701		6,744,518		11,629,882		12,289,012	23,918,894	30,663,412*

2.0 MODEL B CAPITAL COST ESTIMATE DETAILS

KILBORN (SASKATCHEWAN) LTD.

PROJECT SUMMARY

RUN : 28 MAR 84

PROJECT: S239-15

RUN NO. P08

TIME: 14:07

NUTP WASTE MANAGEMENT COST STUDY MODEL B

AREA	DESCRIPTION	LABOR MNHRS	LABOR COST	MATERIAL H.O.	MATERIAL FIELD	MATERIAL TOTAL	TOTAL COST
321	MINEWATER TREATMENT	139	6,950	14,660	244,365	259,025	265,975
322	MILL EFFLUENT TREATMENT	18,297	914,843	1,113,470	482,495	1,595,965	2,510,808
32-		18,436	921,793	1,128,130	726,860	1,854,990	2,776,783*
331	TAILINGS LINE	479	23,929	190,297	93,694	283,990	307,919
332	TAILINGS STORAGE BASIN	12,030	601,492	3,000,012	9,699,542	12,699,554	13,301,046
333	TAILINGS DECANT TREATMENT	16,810	840,500	765,693	781,780	1,547,473	2,387,973
334	MONITORING	1,080	54,000	193,000	35,400	228,400	282,400
33-		30,398	1,519,921	4,149,002	10,610,416	14,759,417	16,279,338*
3--		48,834	2,441,713	5,277,132	11,337,275	16,614,407	19,056,121*
900	CONST.INDIRECTS, E.P.C.M.& CONTINGENCY	29,125	1,456,250	3,128,820	1,803,130	4,931,950	6,388,200
---		77,959	3,897,963	8,405,952	13,140,405	21,546,357	25,444,321*
PROJECT TOTAL		77,959	3,897,963	8,405,952	13,140,405	21,546,357	25,444,321*

KILBORN (SASKATCHEWAN) LTD.

AREA/CLASS MATRIX

RUN : 28 MAR 84

PROJECT: S239-15

RUN NO. P08

TIME: 14:09

NUTP WASTE MANAGEMENT COST STUDY MODEL B

AREA	DESCRIPTION	SITEWORK & IMPROVEMNTS (.1---)	BUILDINGS (.2---)	EQUIPMENT GENERAL (.3---)	MECH EQUIP PROCESS (.4---)	PROCESS PIPING (.5---)	ELECTRICAL POWER (.6---)	INSTRU-MENTATION (.7---)	TRANSFERS (.8---)	AREA TOTAL
321	MINEWATER TREATMENT	240,795			20,980		4,200			265,975
322	MILL EFFLUENT TREATMENT		528,525		716,450	143,250	143,295	71,650	907,638	2,510,808
331	TAILINGS LINE	307,919								307,919
332	TAILINGS STORAGE BASIN	13,301,046								13,301,046
333	TAILINGS DECANT TREATMENT		901,100		991,293	198,250	198,230	99,100		2,387,973
334	MONITORING	57,400	90,000		135,000					282,400
	TOTAL DIRECTS	13,907,160	1,519,625		1,863,723	341,500	345,725	170,750	907,638	19,056,121

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

RUN : 28 MAR 84
TIME: 13:20

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
1900	1	MINEWATER POND CUT MATERIAL	17300	CM							2.70	46,710	46,710	46,710
1900	2	MINEWATER POND TILL FILL	14600	CM							1.71	24,966	24,966	24,966
1900	3	MINEWATER POND COMPACTED GRANULAR FILL	386	CM							4.92	1,899	1,899	1,899
1900	4	MINEWATER POND RIP RAP	1400	CM							15.54	21,756	21,756	21,756
1900	5	MINEWATER POND SAND	1404	CM							2.20	3,089	3,089	3,089
1900	6	MINEWATER POND 80MIL SYN. LINER	7225	SM							17.16	123,981	123,981	123,981
1900	7	MINEWATER POND HIGH LEVEL ALARM	1	LS								1,500	1,500	1,500
1900	8	MINEWATER POND CONCRETE PAD	4	CM							450.00	1,800	1,800	1,800
1900	9	MINEWATER POND 150MM DIA. DRAIN	114	M							13.20	1,505	1,505	1,505
1900	10	MINEWATER POND EMERGENCY O/F PIPE (300MM DIA.STEEL)	20	M							60.00	1,200	1,200	1,200

PROJECT: S239-15 RUN NO. P08
NUTP WASTE MANAGEMENT COST STUDY MODEL B

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
1900	11	MINEWATER POND BUILDING	36	CM							100.00	3,600	3,600	3,600
1900	12	MINEWATER POND - SUMP	1	LS								1,500	1,500	1,500
1900	13	MINEWATER POND PIPE-200MM DIA	130	M							56.07	7,289	7,289	7,289
1900												240,795	240,795	240,795*
4650	1	MINEWATER CLARIFICATION POND PUMPS	2	EA					5,130.00	10,260			10,260	10,260
4650	2	MOTORS - 40HP	2	EA					2,200.00	4,400			4,400	4,400
4650										14,660			14,660	14,660*
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								1,470	1,470	1,470
4920	1	MECHANICAL INSTALLATION 33% OF H.O.MATERIALS	1	LS		97	50	4,850						4,850
49--						97		4,850				1,470	1,470	6,320*
4---						97		4,850		14,660		1,470	16,130	20,980*

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		42	50	2,100				2,100	2,100	4,200
AREA 321 TOTAL						139		6,950		14,660		244,365	259,025	265,975*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	3915	CM	1.35	5,285	50	264,263	67.50	264,263			264,263	528,525
4190	1	SLURRY SAMPLER-DISCHARGE NEUTRALIZATION TANK	1	LS						7,080			7,080	7,080
4440	1	2.5 TONNE HOIST (MANUAL)	1	LS						1,000			1,000	1,000
4610	1	AIR COMPRESSOR 1000CM/H 414KPA-150HP MOTOR	1	LS						44,675			44,675	44,675
4630	1	TAILINGS PUMPS (200MM X 150MM)	4	EA					5,500.00	22,000			22,000	22,000
4630	2	MOTORS - 75 HP	4	EA					4,300.00	17,200			17,200	17,200
4630	3	VARI-SPEED DRIVE	2	EA					41,300.00	82,600			82,600	82,600
4630										121,800			121,800	121,800*
4640	1	TAILINGS AREA SUMP PUMP 75MM	1	LS						4,470			4,470	4,470
4640	2	MOTOR - 25HP	1	LS						1,120			1,120	1,120
4640										5,590			5,590	5,590*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4650	1	GLAND WATER PUMPS (50MM X 25MM)	2	EA					1,770.00	3,540			3,540	3,540
46--										175,605			175,605	175,605*
4820	1	NEUTRALIZATION TANK FEED JUNCTION BOX	225	KG					4.70	1,058			1,058	1,058
4820	2	RUBBER LINING/- JUNCTION BOX	4	SM					171.00	684			684	684
4820	5	NEUTRALIZATION TANKS (3-REQ'D) 8000MM DIA X 8000MM	23050	KG					2.80	64,540			64,540	64,540
4820	6	AGITATORS -RUBBER COVR'D	3	EA					38,330.00	114,990			114,990	114,990
4820	7	MOTORS - 60HP	3	EA					3,600.00	10,800			10,800	10,800
4820	8	RUBBER LINING - NEUTRALIZATION TANKS	740	SM	2.69	1,991	50	99,530			135.00	99,900	99,900	199,430
4820	10	PUMPBOXES - TAILINGS 2000MM SQ X 2000MM (2- REQ'D)	1960	KG					4.70	9,212			9,212	9,212
4820	11	RUBBER LINING - TAILINGS PUMPBOX	39	SM					172.60	6,731			6,731	6,731
4820						1,991		99,530		208,015		99,900	307,915	407,445*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								39,170	39,170	39,170
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		1,723	50	86,150						86,150
49--						1,723		86,150				39,170	39,170	125,320*
4---						3,714		185,680		391,700		139,070	530,770	716,450*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH	1	LS		1,719	50	85,950				57,300	57,300	143,250
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		1,433	50	71,650				71,645	71,645	143,295
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH	1	LS		358	50	17,900				53,750	53,750	71,650
8000	1	CREDIT FROM LIME CIRCUIT (AREA 323) OF 67%	1	LS		5,788	50	289,400		457,508		160,730	618,238	907,638
AREA 322 TOTAL						18,297		914,843		1,113,470		482,495	1,595,965	2,510,808*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	4635	CM	1.35	6,257	50	312,863	67.50	312,863			312,863	625,725
4100	1	BALL MILL - LIME 1000MM DIA. X 1500MM	1	LS						52,100			52,100	52,100
4100	2	MOTOR - 100HP	1	LS						5,500			5,500	5,500
4100	3	CHUTE - DISCHARGE	1	LS						2,000			2,000	2,000
4100										59,600			59,600	59,600*
4180	1	BIN ACTIVATOR -LIME SILO	1	LS						19,000			19,000	19,000
4180	2	CHUTE-DISCHARGE	1	LS						2,000			2,000	2,000
4180										21,000			21,000	21,000*
41--										80,600			80,600	80,600*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
4240	1	DUST COLLECTOR - LIME SILO	1	LS						3,000			3,000	3,000
4420	1	SCREW CONVEYOR - LIME SILO DISCHARGE	1	LS						13,800			13,800	13,800
4420	3	CHUTE - DISCHARGE	1	LS						2,000			2,000	2,000
4420										15,800			15,800	15,800*
4440	1	2.5 TONNE HOIST (MANUAL)	1	LS						1,000			1,000	1,000
44--										16,800			16,800	16,800*
4630	5	LIME BALL MILL DISCHARGE PUMPS 50MM X 38MM	2	EA					6,200.00	12,400			12,400	12,400
4630	10	LIME SLURRY PUMPS (38MM X 25MM)	2	EA					5,690.00	11,380			11,380	11,380
4630										23,780			23,780	23,780*
4640	5	LIME MILL AREA SUMP PUMP 50MM	1	LS						3,600			3,600	3,600

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

RUN : 28 MAR 84
TIME: 13:20

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
4640	10	LIME SLURRY AREA SUMP PUMP - 50MM	1	LS						3,600			3,600	3,600
4640										7,200			7,200	7,200*
46--										30,980			30,980	30,980*
4820	15	LIME SILO 10000MM DIA. X 14000MM	25375	KG					2.80	71,050			71,050	71,050
4820	20	PUMPBOX - LIME BALL MILL DISCHARGE (1000MM SQ X 2000MM)	440	KG					4.70	2,068			2,068	2,068
4820	25	LIME SLURRY TANKS 7000MM DIA X 7000MM (2-REQ'D)	33900	KG					2.80	94,920			94,920	94,920
4820	26	AGITATORS	2	EA					31,480.00	62,960			62,960	62,960
4820	27	MOTORS - 50HP	2	EA					2,900.00	5,800			5,800	5,800
4820										236,798			236,798	236,798*
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								36,800	36,800	36,800

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		1,620	50	81,000						81,000
49--						1,620		81,000				36,800	36,800	117,800*
4---						1,620		81,000		368,178		36,800	404,978	485,978*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH	1	LS		1,166	50	58,300				38,880	38,880	97,180
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		972	50	48,600				48,600	48,600	97,200
7000	1	INSTRUMENTATION 10% OF INSTALLED MECH	1	LS		243	50	12,150				36,450	36,450	48,600
8000	1	CREDIT TO PRODUCTION CAPITAL COST- 33%	-1	LS		-4,470	50	-223,500		-223,545			-223,545	-447,045
8000	2	CREDIT TO MILL EFFLUENT TREATMENT (AREA 322) OF 67%	-1	LS		-5,788	50	-289,400		-457,508		-160,730	-618,238	-907,638
8000						-10,258		-512,900		-681,053		-160,730	-841,783	-1,354,683*
AREA 323 TOTAL						0		13		-13			-13	0*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

RUN : 28 MAR 84
TIME: 13:20

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 331 - TAILINGS LINE														
1800	1	TAILINGS LINE TELEMETRY BUILDING	36	CM							100.00	3,600	3,600	3,600
1800	2	TAILINGS LINE 250MM DIA SERIES 160	4060	M	.113	459	50	22,939	42.61	172,997	5.76	23,386	196,382	219,321
1800	3	TAILINGS LINE FILL MATERIAL	12000	CM							4.40	52,800	52,800	52,800
1800	4	TAILINGS LINE CONTROL CABLE	1100	M	.018	20	50	990	13.00	14,300			14,300	15,290
1800						479		23,929		187,297		79,786	267,082	291,011*
1900	1	EMERGENCY SPILL POND EXCAVATION SUITABLE MATERIAL	1560	CM							2.86	4,462	4,462	4,462
1900	2	EMERGENCY SPILL POND TILL - BENTONITE	1	LS						3,000			3,000	3,000
1900	3	EMERGENCY SPILL POND FILL MATERIAL	1556	CM							4.40	6,846	6,846	6,846
1900	4	EMERGENCY SPILL POND COARSE TILL & ROCK	200	CM							13.00	2,600	2,600	2,600
1900										3,000		13,908	16,908	16,908*
1---						479		23,929		190,297		93,694	283,990	307,919*
AREA 331 TOTAL						479		23,929		190,297		93,694	283,990	307,919*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1900	1	PERMANENT ROADWAYS FILL MATERIAL	73200	CM							4.40	322,080	322,080	322,080
1900	2	PERMANENT ROADWAYS COMPACTED GRANULAR FILL	2900	CM							4.93	14,297	14,297	14,297
1900	3	PERMANENT ROADWAYS EXCAVATE UNSUITABLE MATERIAL	22800	CM							2.70	61,560	61,560	61,560
1900	5	MISC. CLEARING (BORROW AREAS)	1	LS		3,200	50	160,000				620,000	620,000	780,000
1900	10	STARTER DYKE EXCAVATE UNSUITABLE MATERIAL	1222000	CM							2.70	3,299,400	3,299,400	3,299,400
1900	11	STARTER DYKE TILL FILL	470940	CM							4.40	2,072,136	2,072,136	2,072,136
1900	12	STARTER DYKE RIP RAP	21580	CM							15.54	335,353	335,353	335,353
1900	13	STARTER DYKE COMPACTED GRANULAR SURFACE	2383	CM							4.92	11,724	11,724	11,724
1900	14	STARTER DYKE BENTONITE SEAL - POND BASE	9826	TN	.532	5,227	50	261,372	173.01	1,699,996	106.25	1,044,013	2,744,009	3,005,380

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1900	15	STARTER DYKE BENTONTITE SEAL - EMBANKMENT	7505	TN	.480	3,602	50	180,120	173.22	1,300,016	95.80	718,979	2,018,995	2,199,115
1900	20	MOBILIZE & DEMOBILIZE	1	LS								1,200,000	1,200,000	1,200,000
1900						12,030		601,492		3,000,012		9,699,542	12,699,554	13,301,046*
AREA 332 TOTAL						12,030		601,492		3,000,012		9,699,542	12,699,554	13,301,046*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
2000	1	DECANT TREATMENT BLDG.	6000	CM	1.35	8,100	50	405,000			67.50	405,000	405,000	810,000
2000	2	DECANT LINE	500	M	.116	58	50	2,900	15.20	7,600	5.80	2,900	10,500	13,400
2000	3	SLUDGE RETURN LINE	600	M	.100	60	50	3,000	11.83	7,100	5.00	3,000	10,100	13,100
2000	4	POWER LINE & ELECTRICAL SUBSTATION	1	LS		432	50	21,600				43,000	43,000	64,600
2000						8,650		432,500		14,700		453,900	468,600	901,100*
4130	1	SAND FILTERS C/W AUTO CONTROLS 2500MM DIA. X 4000MM	1	LS						224,200			224,200	224,200
4310	1	IN-LINE MIXER-NITRIC ACID	1	LS						1,800			1,800	1,800
4610	1	AIR COMPRESSOR 200 CM/H C/W TANK MOUNTED 25HP MOTOR	1	LS						7,375			7,375	7,375

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
4620	1	FAN - BARIUM CHLORIDE MIX TANK VENT	1	LS						770			770	770
4630	1	SAND FILTER FEED PUMPS (150MM X 100MM)	2	EA					3,860.00	7,720			7,720	7,720
4630	2	MOTOR - 30HP	2	EA					1,300.00	2,600			2,600	2,600
4630	5	BACKWASH SURGE PUMPS (100MM X 75MM)	2	EA					6,460.00	12,920			12,920	12,920
4630	6	MOTORS - 30HP	2	EA					1,300.00	2,600			2,600	2,600
4630	10	BACKWASH PUMPS (100MM X 75MM)	2	EA					2,890.00	5,780			5,780	5,780
4630	11	MOTORS - 30HP	2	EA					1,300.00	2,600			2,600	2,600
4630	15	BARIUM CHLORIDE METERING PUMPS (13MM X 13MM)	2	EA					1,770.00	3,540			3,540	3,540
4630	20	BARIUM CHLORIDE TRANSFER PUMP (100MM X 75MM)	1	LS						2,585			2,585	2,585
4630	25	NITRIC ACID TRANSFER PUMP (75MM X 38MM)	1	LS						3,525			3,525	3,525

PROJECT: S239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
4630	30	NITRIC ACID FEED PUMP (100MM X 75MM)	1	LS						4,545			4,545	4,545
4630	31	MOTOR - 25HP	1	LS						1,120			1,120	1,120
4630	35	FLOCCULANT METERING PUMP 13MM X 13MM	2	EA					1,770.00	3,540			3,540	3,540
4630										53,075			53,075	53,075*
4640	1	DECANT AREA SUMP PUMP 50MM	1	LS						3,500			3,500	3,500
4640	5	NITRIC ACID AREA SUMP PUMP-50MM STAINLESS STL.	1	LS						5,700			5,700	5,700
4640	10	TAILINGS POND BARGE PUMPS 150MM C/W FLOATS & BLDG	1	LS						175,000			175,000	175,000
4640										184,200			184,200	184,200*
46--										245,420			245,420	245,420*
4820	1	DECANT TREATMENT TANKS 5000MM DIA. X 5000MM (2 REQ'D)	16340	KG					2.80	45,752			45,752	45,752

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
4820	2	AGITATOR (TANK #1 ONLY)	1	LS						18,540			18,540	18,540
4820	3	MOTOR - 25HP	1	LS						1,120			1,120	1,120
4820	5	PUMPBOX - SAND FILTER FEED	780	KG					4.70	3,666			3,666	3,666
4820	10	BACKWASH SURGE TANK (6000MM DIA X 6000MM)	10930	KG					2.80	30,604			30,604	30,604
4820	15	BACKWASH TANK (6000MM DIA X 6000MM)	10930	KG					2.80	30,604			30,604	30,604
4820	20	BARIUM CHLORIDE MIX TANK (2500MM DIA X 2500MM)	1160	KG					4.70	5,452			5,452	5,452
4820	21	HOPPER - FEED	1	LS						2,000			2,000	2,000
4820	22	MIXER	1	LS						5,300			5,300	5,300
4820	25	BARIUM CHLORIDE STORAGE TANK (2500MM DIA X 2500MM)	1160	KG					4.70	5,452			5,452	5,452
4820	30	NITRIC ACID HOLDING TANK (STAINLESS STEEL) (4000MM DIA 4000MM)	5435	KG					5.77	31,360			31,360	31,360
4820	35	NITRIC ACID DILUTION TANK (STAINLESS STEEL) (6500MM DIA X 6500MM)	14140	KG					5.77	81,588			81,588	81,588

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
4820	40	FLOCCULANT MIX TANK (3000MM DIA X 3000MM)	1850	KG					4.70	8,695			8,695	8,695
4820	41	AGITATOR	1	LS						8,420			8,420	8,420
4820	42	MOTOR - 15HP	1	LS						820			820	820
4820	43	ASPIRATOR	1	LS						200			200	200
4820										279,573			279,573	279,573*
4910	1	FIELD MATERIAL 10% OF H.O.MATERIAL	1	LS								75,100	75,100	75,100
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		3,304	50	165,200						165,200
49--						3,304		165,200				75,100	75,100	240,300*
4---						3,304		165,200		750,993		75,100	826,093	991,293*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH	1	LS		2,379	50	118,950				79,300	79,300	198,250
6000	1	ELECTRICAL 20% OF INSTALLED MECH	1	LS		1,982	50	99,100				99,130	99,130	198,230

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15

NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

RUN : 28 MAR 84
TIME: 13:20

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 333 - TAILINGS DECANT TREATMENT														
7000	1	INSTUMENTATION 10% OF INSTALLED MECH	1	LS		495	50	24,750				74,350	74,350	99,100
AREA 333 TOTAL						16,810		840,500		765,693		781,780	1,547,473	2,387,973*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 334 - MONITORING														
1900	1	PIEZOMETERS	1	LS		140	50	7,000		13,000		27,400	40,400	47,400
1900	2	SAMPLING WELLS	1	LS		40	50	2,000				8,000	8,000	10,000
1900						180		9,000		13,000		35,400	48,400	57,400*
2000	1	LABORATORY BUILDING	300	SM	10	3,000	50	150,000	500.00	150,000			150,000	300,000
2000	2	CREDIT TO PRODUCTION CAPITAL COST - 70%	-1	LS		-2,100	50	-105,000		-105,000			-105,000	-210,000
2000						900		45,000		45,000			45,000	90,000*
4000	1	LAB. EQUIPMENT	1	LS						450,000			450,000	450,000
4000	2	CREDIT TO PRODUCTION CAPITAL COST - 70%	-1	LS						-315,000			-315,000	-315,000
4000										135,000			135,000	135,000*
AREA 334 TOTAL						1,080		54,000		193,000		35,400	228,400	282,400*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15

NUTP WASTE MANAGEMENT COST STUDY MODEL B

RUN NO. P08

RUN : 28 MAR 84
TIME: 13:20

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 900 - CONST.INDIRECTS, E.P.C.M.& CONTINGENCY														
9100	1	CONSTRUCTION INDIRECTS	1	LS		15,245	50	762,250				762,230	762,230	1,524,480
9200	1	ENGINEERING, PROCUREMENT AND CONSTRUCTION MANAGEMENT	1	LS						2,286,740			2,286,740	2,286,740
9300	1	SPARE PARTS - 5% OF H.O. MATERIAL	1	LS						263,860			263,860	263,860
9900	1	CONTINGENCY	1	LS		13,880	50	694,000		578,220		1,040,900	1,619,120	2,313,120
9---						29,125		1,456,250		3,128,820		1,803,130	4,931,950	6,388,200*
AREA 900 TOTAL						29,125		1,456,250		3,128,820		1,803,130	4,931,950	6,388,200*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

RUN : 28 MAR 84
TIME: 13:20

PROJECT: 5239-15

RUN NO. P08

NUTP WASTE MANAGEMENT COST STUDY MODEL B

CLSS ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
TOTAL DIRECTS					77,960		3,897,976		8,405,939		13,140,405	21,546,345	25,444,320*
TOTAL DIRECTS AND INDIRECTS					77,960		3,897,976		8,405,939		13,140,405	21,546,345	25,444,320*
CONTINGENCY													0*
PROJECT TOTAL					77,960		3,897,976		8,405,939		13,140,405	21,546,345	25,444,320*

3.0 MODEL C CAPITAL COST ESTIMATE DETAILS

KILBORN (SASKATCHEWAN) LTD.

PROJECT SUMMARY

PROJECT: S239-15

RUN NO. F08

RUN : 30 MAR 84
TIME: 14:45

NUTP WASTE MANAGEMENT COST STUDY MODEL C

AREA	DESCRIPTION	LABOR MNHRS	LABOR COST	MATERIAL H.O.	MATERIAL FIELD	MATERIAL TOTAL	TOTAL COST
321	MINEWATER TREATMENT	23,099	1,154,955	1,410,045	1,025,107	2,435,152	3,590,107
322	MILL EFFLUENT TREATMENT	127,020	6,350,999	7,882,299	2,808,183	10,690,482	17,041,481
323	LIME CIRCUIT			-0		-0	-0
324	BARIUM CHLORIDE			0		0	0
325	FLOCCULANT			0		0	0
326	NITRIC ACID			-0		-0	-0
32-		150,119	7,505,954	9,292,345	3,833,290	13,125,635	20,631,589*
331	TAILINGS LINE	9,071	453,565	854,400	410,576	1,264,976	1,718,541
332	TAILINGS STORAGE BASIN	10,660	533,010		11,404,592	11,404,592	11,937,602
334	MONITORING	2,783	139,150	216,180	857,595	1,073,775	1,212,925
33-		22,514	1,125,725	1,070,580	12,672,763	13,743,343	14,869,068*
3--		172,634	8,631,679	10,362,925	16,506,053	26,868,978	35,500,657*
900	CONST.INDIRECTS,E.F.C.M., & CONTINGENCY	48,503	2,425,150	6,526,670	3,212,715	9,739,385	12,164,535
---		221,137	11,056,829	16,889,595	19,718,768	36,608,363	47,665,192*
PROJECT TOTAL		221,137	11,056,829	16,889,595	19,718,768	36,608,363	47,665,192*

KILBORN (SASKATCHEWAN) LTD.

AREA/CLASS MATRIX

RUN : 30 MAR 84

PROJECT: S239-15

RUN NO. P08

TIME: 14:47

NUTP WASTE MANAGEMENT COST STUDY MODEL C

AREA	DESCRIPTION	SITEWORK & IMPROVEMNTS (.1---)	BUILDINGS (.2---)	EQUIPMENT GENERAL (.3---)	MECH EQUIP PROCESS (.4---)	PROCESS PIPING (.5---)	ELECTRICAL POWER (.6---)	INSTRU-MENTATION (.7---)	TRANSFERS (.8---)	AREA TOTAL
321	MINEWATER TREATMENT	656,755	1,050,000		839,038	167,800	167,800	100,710	608,004	3,590,107
322	MILL EFFLUENT TREATMENT		4,329,100		6,585,568	1,317,100	1,317,100	790,270	2,702,343	17,041,481
323	LIME CIRCUIT		843,700		747,714	149,550	149,550	89,725	-1,980,239	-0
324	BARIUM CHLORIDE		281,800		48,872	9,775	9,775	5,865	-356,087	0
325	FLOCCULANT		241,500		57,483	11,500	11,500	6,900	-328,883	0
326	NITRIC ACID		386,700		170,038	34,000	34,000	20,400	-645,138	-0
331	TAILINGS LINE	1,636,741						81,800		1,718,541
332	TAILINGS STORAGE BASIN	11,937,602								11,937,602
334	MONITORING	779,495	90,000		225,930	45,200	45,200	27,100		1,212,925
	TOTAL DIRECTS	15,010,593	7,222,800		8,674,644	1,734,925	1,734,925	1,122,770	-0	35,500,657

PROJECT: S239-15 RUN NO. P08
NUTP WASTE MANAGEMENT COST STUDY MODEL C

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
1900	1	MINEWATER & SETTLING PONDS - CUT MATERIAL	48330	CM							2.70	130,491	130,491	130,491
1900	2	MINEWATER & SETTLING PONDS - FILL & PLACEMENT MATERIAL	46750	CM							1.70	79,475	79,475	79,475
1900	3	MINEWATER & SETTLING PONDS - CLEARING	2	HA							16,375	32,750	32,750	32,750
1900	4	MINEWATER & SETTLING PONDS SAND FILTER BLANKET	2790	CM							2.20	6,138	6,138	6,138
1900	5	MINEWATER & SETTLING PONDS - TILL BENTONITE SEAL	32	TN							338.89	10,844	10,844	10,844
1900	6	MINEWATER & SETTLING PONDS -100 MIL SYNTHETIC LINER	8550	SM							20.63	176,387	176,387	176,387
1900	7	MINEWATER & SETTLING PONDS DRAINAGE PIPES	396	M							8.51	3,370	3,370	3,370
1900	8	MINEWATER & SETTLING PONDS - MISC. CARBON STEEL PIPE	1	LS								150,000	150,000	150,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
1900	9	MINEWATER & PRECIP.PONDS MISC.CONC.VALVE HOUSE, SUMPS, & INSTRUMENTATION	1	LS								67,300	67,300	67,300
1900												656,755	656,755	656,755*
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	10500	CM	1	10,500	50	525,000	50.00	525,000			525,000	1,050,000
4130	1	SAND FILTERS (3 REQ'D) 2500MM DIA. X 3700MM) C/W CONTROLS & MEDIA	1	LS						168,150			168,150	168,150
4240	2	DUST COLLECTOR (FERRI-FLOC STORAGE BIN)	1	LS						3,000			3,000	3,000
4420	10	SCREW CONVEYOR - FERRI-FLOC STORAGE BIN DISCH. 150MM DIA X 7M LONG	1	LS						7,450			7,450	7,450
4440	1	2.5 TONNE HOIST (MANUAL)	1	LS						1,000			1,000	1,000
44--										8,450			8,450	8,450*
4630	1	SAND FILTER FEED PUMPS 150MM X 100MM	2	EA					3,860.00	7,720			7,720	7,720

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
4630	2	MOTORS - 25HP	2	EA					1,120.00	2,240			2,240	2,240
4630	5	BACKWASH PUMPS 100MM X 75MM	2	EA					2,585.00	5,170			5,170	5,170
4630	6	MOTOR - 15HP	2	EA					820.00	1,640			1,640	1,640
4630	10	FERRI-FLOC TRANSFER PUMP 100MM X 75MM	1	LS						4,540			4,540	4,540
4630	15	FERRI-FLOC METERING PUMP 38MM X 38MM	2	EA					3,000.00	6,000			6,000	6,000
4630										27,310			27,310	27,310*
4640	1	MINEWATER POND SUMP PUMPS 150MM	2	EA					5,135.00	10,270			10,270	10,270
4640	2	MOTORS - 40HP	2	EA					5,500.00	11,000			11,000	11,000
4640	5	MINEWATER TREATMENT AREA SUMP PUMP 50MM	1	LS						3,775			3,775	3,775
4640	10	SETTLING POND NO.1 SUMP PUMP 100MM	2	EA					4,520.00	9,040			9,040	9,040
4640	11	MOTOR - 20HP	2	EA					900.00	1,800			1,800	1,800

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: 5239-15
NUTP WASTE MANAGEMENT COST STUDY MODEL C

RUN NO. P08

RUN : 30 MAR 84
TIME: 14:51

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
4640	15	SETTLING POND NO.2 SUMP PUMP - 100MM	2	EA					4,520.00	9,040			9,040	9,040
4640	16	MOTOR - 20HP	2	EA					900.00	1,800			1,800	1,800
4640	20	SITE RUNOFF SUMP PUMP 50MM	2	EA					3,775.00	7,550			7,550	7,550
4640	25	REAGENT AREA SUMP PUMP 50MM	1	LS						3,775			3,775	3,775
4640										58,050			58,050	58,050*
46--										85,360			85,360	85,360*
4810	5	STORAGE BIN (FERRI-FLOC) 600 TONNE 6000MM DIA X 8000MM	9220	KG					2.80	25,816			25,816	25,816
4810	6	DISCHARGE CHUTE - FERRI-FLOC.STORAGE BIN	1	LS						2,000			2,000	2,000
4810										27,816			27,816	27,816*
4820	1	TREATMENT TANKS-NO.1 & 2 4500MM DIA X 4500MM (2 REQ'D)	14380	KG					2.80	40,264			40,264	40,264

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
4820	2	AGITATOR	2	EA					15,715.00	31,430			31,430	31,430
4820	3	MOTOR - 20HP	2	EA					900.00	1,800			1,800	1,800
4820	5	FLASH MIX TANK 1500MM DIA X 1500MM	620	KG					4.70	2,914			2,914	2,914
4820	6	AGITATOR	1	LS						6,725			6,725	6,725
4820	10	TREATMENT TANKS-NO.3 & 4 (2 REQ'D) 4500MM X 4500MM	14380	KG					2.80	40,264			40,264	40,264
4820	11	AGITATOR	2	EA					15,715.00	31,430			31,430	31,430
4820	12	MOTOR - 20HP	2	EA					900.00	1,800			1,800	1,800
4820	15	FLASH MIX TANK 1500MM DIA X 1500MM	620	KG					4.70	2,914			2,914	2,914
4820	16	AGITATOR	1	LS						6,725			6,725	6,725
4820	20	SAND FILTER FEED PUMP BOX - 2000MM DIA. X 2500MM	925	KG					4.70	4,348			4,348	4,348
4820	25	PH ADJUSTMENT TANK 4500MM DIA. X 4500MM	7190	KG					2.80	20,132			20,132	20,132

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
4820	30	BACKWASH TANK 4500MM DIA. X 4500MM	7190	KG					2.80	20,132			20,132	20,132
4820	35	FERRI-FLOC MIXING TANK 3000MM DIA X 3000MM	2396	KG					4.70	11,261			11,261	11,261
4820	36	AGITATOR - RUBBER COVR'D	1	LS						11,700			11,700	11,700
4820	37	MOTOR - 15HP	1	LS						820			820	820
4820	38	RUBBER LINING - FERRI-FLOC MIXING TANK	145	SM	2.70	392	50	19,575			135.00	19,575	19,575	39,150
4820	40	FERRI-FLOC HOLDING TANK 5500MM DIA. X 5500MM	8853	KG					2.80	24,788			24,788	24,788
4820	41	AGITATOR - RUBBER COVR'D	1	LS						28,500			28,500	28,500
4820	42	MOTOR - 25HP	1	LS						1,120			1,120	1,120

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
4820	43	RUBBER LINING - FERRI-FLOC HOLDING TANK	118	SM	2.70	319	50	15,930			135.00	15,930	15,930	31,860
4820						710		35,505		289,067		35,505	324,572	360,077*
48--						710		35,505		316,883		35,505	352,388	387,893*
4910	1	FIELD MATERIAL 10% OF H.O.MATERIAL	1	LS								58,185	58,185	58,185
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		2,560	50	128,000						128,000
49--						2,560		128,000				58,185	58,185	186,185*
4---						3,270		163,505		581,843		93,690	675,533	839,038*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		2,014	50	100,700				67,100	67,100	167,800
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		1,678	50	83,900				83,900	83,900	167,800
7000	1	INSTRUMENTATION 12% OF INSTALLED MECH.	1	LS		504	50	25,200				75,510	75,510	100,710

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 321 - MINEWATER TREATMENT														
8000	1	CREDIT FROM LIME CIRCUIT AREA (323) OF 2.3%	1	LS		348	50	17,400		22,256		5,897	28,153	45,553
8000	2	CREDIT FROM BARIUM CHLORIDE AREA (324) OF 35.7%	1	LS		1,151	50	57,550		63,518		6,039	69,557	127,107
8000	3	CREDIT FROM FLOCCULANT AREA (325) OF 34.3%	1	LS		992	50	49,600		56,349		6,826	63,175	112,775
8000	4	CREDIT FROM NITRIC ACID AREA (326) OF 50.0%	1	LS		2,642	50	132,100		161,079		29,390	190,469	322,569
8000						5,133		256,650		303,202		48,152	351,354	608,004*
AREA 321 TOTAL						23,099		1,154,955		1,410,045		1,025,107	2,435,152	3,590,107*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
2000	1	BUILDING - INCL.AMMONIUM SULPH.PLANT BLDG.& EQUIP SUPPORTS-BLDG. SERVICES	43291	CM	1	43,291	50	2,164,550	50.00	2,164,550			2,164,550	4,329,100
4130	1	DRUM FILTER C/W SCRAPER DISCHARGE , RUBBER COVERED , MILD STEEL	2	EA					236,000	472,000			472,000	472,000
4130	2	FILTRATE RECEIVER 760MM DIA. X 1530MM	2	EA					6,500.00	13,000			13,000	13,000
4130	3	SEAL TANKS 1000MM DIA. X 1000MM	3	EA					5,200.00	15,600			15,600	15,600
4130	4	CONDENSER 760MM DIA X 1530MM	1	LS						6,500			6,500	6,500
4130	5	REPULPER - DRUM FILTER DISCHARGE (1 REQ'D)	1	LS						11,300			11,300	11,300
4130	10	SAND FILTER - 2500MM X 3700MM (3 REQ'D) C/W CONTROLS & MEDIA	1	LS						168,150			168,150	168,150
4130										686,550			686,550	686,550*
4230	1	AMMONIUM SULPHATE PACKAGE CRYSTALLIZATION/ DRYER PLANT (0.8T/H CAP)	1	LS						1,200,000			1,200,000	1,200,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4260	1	CLARIFIER THICKENER (2 REQ'D) 10000MM DIA.	2	EA					201,780	403,560			403,560	403,560
42--										1,603,560			1,603,560	1,603,560*
4300	5	BIN ACTIVATOR - AMMONIUM SULPHATE BIN	1	LS						28,980			28,980	28,980
4300	6	DISCHARGE CHUTE - AMMON. SULPHATE BIN ACTIVATOR	1	LS						2,000			2,000	2,000
4300										30,980			30,980	30,980*
4430	1	AMMONIUM SULPHATE BUCKET ELEVATOR	1	LS						14,400			14,400	14,400
4430	2	MOTOR - 15HP	1	LS						820			820	820
4430										15,220			15,220	15,220*
4440	1	BRIDGE CRANE - 2.5 TONNE X 30M SPAN (PACHUCA AREA)	1	LS						113,400			113,400	113,400
4440	5	BRIDGE CRANE - 2.5 TONNE X 18M SPAN	1	LS						61,400			61,400	61,400
4440										174,800			174,800	174,800*
44--										190,020			190,020	190,020*

CLSS	ITM	DESCRIPTION	QUAN	UM	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4530	1	COOLING TOWER	1	LS						20,000			20,000	20,000
4610	1	VACUUM PUMPS	2	EA					36,100.00	72,200			72,200	72,200
4610	2	MOTOR - 125HP-1200RPM	2	EA					8,700.00	17,400			17,400	17,400
4610	3	LOW PRESS. AIR COMPRES-SOR - 500CM/M - 140KPA C/W RECV'R & SILENCER	1	LS						20,760			20,760	20,760
4610	4	MOTOR - 40HP	1	LS						2,200			2,200	2,200
4610	5	AIR COMPRESSOR - PROCESS AIR - 1700CM/H,414KPA	1	LS						58,230			58,230	58,230
4610										170,790			170,790	170,790*
4630	1	CLARIFIER THICKENER NO.1 U/F DIAPHRAGM PUMP	1	LS						32,800			32,800	32,800
4630	5	DRUM FILTER FEED PUMPS 75MM X 50MM	2	EA					2,540.00	5,080			5,080	5,080
4630	10	WASTE SLUDGE PUMP 75MM X 50MM	2	EA					2,540.00	5,080			5,080	5,080

PROJECT: S239-15
NUTF WASTE MANAGEMENT COST STUDY MODEL C

RUN NO. P08

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4630	15	FILTRATE PUMPS 75MM X 50MM	2	EA					2,065.00	4,130			4,130	4,130
4630	20	CLARIFIER THICKENER NO.2 U/F DIAPHRAGM PUMPS	1	LS						22,650			22,650	22,650
4630	25	SAND FILTER FEED PUMPS 150MM X 100MM	2	EA					3,860.00	7,720			7,720	7,720
4630	26	MOTOR - 25HP	2	EA					1,120.00	2,240			2,240	2,240
4630	30	TAILINGS PUMPS C/W BASE PLT,DISCH. HDR,SURGE VESSEL,V-BELT DRIVE	2	EA					177,000	354,000			354,000	354,000
4630	31	MOTORS - 100HP	2	EA					5,500.00	11,000			11,000	11,000
4630	35	BACKWASH PUMPS 100MM X 75MM	2	EA					2,585.00	5,170			5,170	5,170
4630	36	MOTOR - 15HP	2	EA					820.00	1,640			1,640	1,640
4630	40	TREATED EFFLUENT PUMPS 150MM X 100MM	2	EA					3,860.00	7,720			7,720	7,720
4630	41	MOTORS - 15HP	2	EA					820.00	1,640			1,640	1,640
4630										460,870			460,870	460,870*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4640	1	RAFFINATE TREATMENT SUMP PUMP - 75MM	1	LS						4,270			4,270	4,270
4640	5	TAILINGS NEUTRALIZATION AREA SUMP PUMP- 75MM	1	LS						4,270			4,270	4,270
4640										8,540			8,540	8,540*
4650	1	COOLING WATER PUMP 100MM X 75MM	1	LS						2,585			2,585	2,585
4650	2	MOTOR - 30HP	1	LS						1,300			1,300	1,300
4650	3	TAILINGS SEEPAGE AND RUNOFF PUMPS 100MM X 75MM	2	EA					2,585.00	5,170			5,170	5,170
4650	4	MOTORS - 50HP	2	EA					2,900.00	5,800			5,800	5,800
4650	7	TAILINGS SEEPAGE AND RUNOFF PUMPS 100MM X 75MM	2	EA					2,585.00	5,170			5,170	5,170
4650	8	MOTORS - 75HP	2	EA					4,300.00	8,600			8,600	8,600
4650										28,625			28,625	28,625*
46--										668,825			668,825	668,825*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4810	5	AMMONIUM SULPHATE STORAGE BIN 600 TONNE 7000MM DIA X 14000MM	14650	KG					2.80	41,020			41,020	41,020
4820	1	JUNCTION BOX (PACHUCA FEED)2000MM DIA.X 2500MM	900	KG					4.70	4,230			4,230	4,230
4820	2	RUBBER LINING - JUNCTION BOX	18	SM					170.00	3,060			3,060	3,060
4820	3	TAILINGS SEEPAGE AND RUNOFF TANK 10000MM DIA. X 12000MM	24200	KG					2.80	67,760			67,760	67,760
4820	5	NEUTRALIZATION PACHUCAS (4 REQ'D)4000MM DIA. X 8000MM	32130	KG					2.80	89,964			89,964	89,964
4820	6	RUBBER LINING -PACHUCAS	365	SM					170.00	62,050			62,050	62,050
4820	10	FLASH MIX TANK 2000MM DIA X 2000MM	1055	KG					4.70	4,959			4,959	4,959
4820	11	AGITATOR	1	LS						6,725			6,725	6,725
4820	15	DRUM FILTER FEED SURGE TANK 3500MM DIA.X 3500MM	3280	KG					4.70	15,416			15,416	15,416

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4820	20	SPLITTER BOX - DRUM FILTER FEED	1	LS						4,000			4,000	4,000
4820	30	FILTRATE TANK 3000MM DIA. X 3000MM	2396	KG					4.70	11,261			11,261	11,261
4820	35	WASTE SLUDGE PUMP BOX 1000MM X 1000MM X 1000MM	350	KG					4.70	1,645			1,645	1,645
4820	40	PRECIPITATION TANKS (4 - REQ'D) 4500MM DIA. X 4500MM	28760	KG					2.80	80,528			80,528	80,528
4820	41	AGITATOR	4	EA					15,715.00	62,860			62,860	62,860
4820	42	MOTOR - 20HP	4	EA					900.00	3,600			3,600	3,600
4820	43	EPOXY LINING - PRECIP. TANKS	13	SM	4	52	50	2,600			200.00	2,600	2,600	5,200
4820	45	FLASH MIX TANK 2000MM DIA X 2000MM	1055	KG					4.70	4,959			4,959	4,959
4820	46	AGITATOR	1	LS						6,725			6,725	6,725
4820	50	SAND FILTER PUMP BOX 1500MM DIA. X 1500MM	380	KG					4.70	1,786			1,786	1,786
4820	55	TAILINGS NEUTRALIZATION TANKS (2 REQ'D) 6000MMDIA X 8500MM	33900	KG					2.80	94,920			94,920	94,920

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4820	56	AGITATORS -RUBBER COVR'D	2	EA					28,550.00	57,100			57,100	57,100
4820	57	MOTORS - 30HP	2	EA					1,300.00	2,600			2,600	2,600
4820	58	RUBBER LINING - TAILINGS NEUTRALIZATION TANKS	386	SM	2.69	1,038	50	51,917			135.00	52,110	52,110	104,027
4820	60	TAILINGS SURGE TANK (4 REQ'D) 11000MM DIA X 11000MM	87970	KG					2.80	246,316			246,316	246,316
4820	61	AGITATORS- RUBBER COVR'D	4	EA					51,870.00	207,480			207,480	207,480
4820	62	MOTORS - 75HP	4	EA					4,300.00	17,200			17,200	17,200
4820	63	RUBBER LINING - TAILINGS SURGE TANKS	1723	SM	2.68	4,618	50	230,882			135.00	232,605	232,605	463,487
4820	65	BACKWASH TANK 4000MM DIA. X 4000MM	9240	KG					4.70	43,428			43,428	43,428
4820	70	PH ADJUSTMENT TANK 4000MM DIA. X 4000MM	9240	KG					4.70	43,428			43,428	43,428
4820						5,708		285,399		1,143,999		287,315	1,431,314	1,716,713*
4850	1	LAUNDER - DIAPHRAGM PUMP DISCHARGE	1	LS						2,000			2,000	2,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
4850	5	LAUNDER - DIAPHRAGM PUMP DISCHARGE	1	LS						2,000			2,000	2,000
4850										4,000			4,000	4,000*
48--						5,708		285,399		1,189,019		287,315	1,476,334	1,761,733*
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								438,900	438,900	438,900
4920	1	MECHANICAL INSTALLATION 27% OF H.O.MATERIAL	1	LS		23,700	50	1,185,000						1,185,000
49--						23,700		1,185,000				438,900	438,900	1,623,900*
4---						29,408		1,470,399		4,388,954		726,215	5,115,169	6,585,568*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		15,805	50	790,250				526,850	526,850	1,317,100
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		13,171	50	658,550				658,550	658,550	1,317,100
7000	1	INSTRUMENTATION 12% OF UNSTALLED MECH.	1	LS		3,951	50	197,550				592,720	592,720	790,270

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 322 - MILL EFFLUENT TREATMENT														
8000	1	CREDIT FROM LIME CIRCUIT (323) OF 97.7%	1	LS		14,776	50	738,800		945,378		250,508	1,195,886	1,934,686
8000	2	CREDIT FROM BARIUM CHLORIDE AREA (324) OF 64.3%	1	LS		2,074	50	103,700		114,404		10,876	125,280	228,980
8000	3	CREDIT FROM FLOCCULANT AREA (325) OF 65.7%	1	LS		1,902	50	95,100		107,934		13,074	121,008	216,108
8000	4	CREDIT FROM NITRIC ACID AREA (326) OF 50.0%	1	LS		2,642	50	132,100		161,079		29,390	190,469	322,569
8000						21,394		1,069,700		1,328,795		303,848	1,632,643	2,702,343*
AREA 322 TOTAL						127,020		6,350,999		7,882,299		2,808,183	10,690,482	17,041,481*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
2000	1	BUILDING - INCLUDES EQUIPMENT SUPPORTS & BUILDING SERVICES	8437	CM	1	8,437	50	421,850	50.00	421,850			421,850	843,700
4160	1	LIME SLAKER C/W 3HP MIXER DRIVE & 1HP CLASSIFIER DRIVE	2	EA					94,400.00	188,800			188,800	188,800
4240	1	DUST COLLECTOR (LIME SILO)	2	EA					3,000.00	6,000			6,000	6,000
4300	1	BIN ACTIVATOR - LIME SILO	4	EA					11,150.00	44,600			44,600	44,600
4300	2	DISCHARGE CHUTE	4	EA					2,000.00	8,000			8,000	8,000
4300										52,600			52,600	52,600*
4420	5	SCREW CONVEYOR - LIME SILO DISCHARGE 150MM DIA X 7M LONG	2	EA					7,450.00	14,900			14,900	14,900
4630	1	LIME PUMPS - 50MM X 38MM	2	EA					6,200.00	12,400			12,400	12,400
4630	5	LIME SLURRY FEED PUMPS 50MM X 38MM	2	EA					6,200.00	12,400			12,400	12,400
4630										24,800			24,800	24,800*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
4640	1	LIME AREA SUMP PUMP 50MM	1	LS						3,775			3,775	3,775
46--										28,575			28,575	28,575*
4810	1	LIME SILO - 600 TONNE EA 7000MM DIA X 20000MM (2 REQ'D)	49830	KG					2.80	139,524			139,524	139,524
4820	1	LIME PUMP BOX 1000MM X 1000MM X 1000MM	350	KG					4.70	1,645			1,645	1,645
4820	5	LIME SLURRY TANKS (2 REQD) 6000MM DIA. X 6000MM	21800	KG					2.80	61,040			61,040	61,040
4820	6	AGITATOR	2	EA					25,050.00	50,100			50,100	50,100
4820	7	MOTORS - 30HP	2	EA					1,300.00	2,600			2,600	2,600
4820										115,385			115,385	115,385*
48--										254,909			254,909	254,909*
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								54,580	54,580	54,580

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 323 - LIME CIRCUIT														
4920	1	MECHANICAL INSTALLATION 27% OF H.O.MATERIAL	1	LS		2,947	50	147,350						147,350
49--						2,947		147,350				54,580	54,580	201,930*
4---						2,947		147,350		545,784		54,580	600,364	747,714*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		1,795	50	89,750				59,800	59,800	149,550
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		1,496	50	74,800				74,750	74,750	149,550
7000	1	INSTRUMENTATION 12% OF INSTALLED MECH.	1	LS		449	50	22,450				67,275	67,275	89,725
8000	1	CREDIT TO MINEWATER TREATMENT AREA(321) OF 2.3%	-1	LS		-348	50	-17,400		-22,256		-5,897	-28,153	-45,553
8000	2	CREDIT TO MILL EFFLUENT TREATMENT AREA (322) OF 97.7%	-1	LS		-14,776	50	-738,800		-945,378		-250,508	-1,195,886	-1,934,686
8000						-15,124		-756,200		-967,634		-256,405	-1,224,039	-1,980,239*
AREA 323 TOTAL										-0			-0	-0*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - BARIUM CHLORIDE														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	2818	CM	1	2,818	50	140,900	50.00	140,900			140,900	281,800
4620	1	FAN - VENTILATION (BARIUM CHLORIDE HOPPER)	1	LS						770			770	770
4630	20	BARIUM CHLORIDE TRANSFER PUMP - 100MM X 75MM	1	LS						2,890			2,890	2,890
4630	25	BARIUM CHLORIDE METERING PUMPS - 13MM X 13MM	2	EA					1,770.00	3,540			3,540	3,540
4630										6,430			6,430	6,430*
46--										7,200			7,200	7,200*
4820	20	BARIUM CHLORIDE MIXING TANK - 3000MM DIA X 3000MM	2396	KG					4.70	11,261			11,261	11,261
4820	21	MIXER - BARIUM CHLORIDE TANK	1	LS						5,300			5,300	5,300
4820	22	HOPPER - BARIUM CHLORIDE FEED	1	LS						2,000			2,000	2,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - BARIUM CHLORIDE														
4820	25	BARIUM CHLORIDE HOLDING TANK - 3000MM DIA X 3000MM	2396	NG					4.70	11,261			11,261	11,261
4820										29,822			29,822	29,822*
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								3,700	3,700	3,700
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		163	50	8,150						8,150
49--						163		8,150				3,700	3,700	11,850*
4---						163		8,150		37,022		3,700	40,722	48,872*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		117	50	5,850				3,925	3,925	9,775
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		98	50	4,900				4,875	4,875	9,775
7000	1	INSTRUMENTATION 12% OF INSTALLED MECH.	1	LS		29	50	1,450				4,415	4,415	5,865

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 324 - BARIUM CHLORIDE														
B000	1	CREDIT TO MINEWATER TREATMENT AREA (321)OF 35.7%	-1	LS		-1,151	50	-57,550		-63,518		-6,039	-69,557	-127,107
B000	2	CREDIT TO MILL EFFLUENT TREATMENT AREA (322) OF 64.3%	-1	LS		-2,074	50	-103,700		-114,404		-10,876	-125,280	-228,980
B000						-3,225		-161,250		-177,922		-16,915	-194,837	-356,087*
AREA 324 TOTAL										0			0	0*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 325 - FLOCCULANT														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	2415	CM	1	2,415	50	120,750	50.00	120,750			120,750	241,500
4630	40	FLOCCULANT TRANSFER PUMP 50MM X 50MM	1	LS						3,100			3,100	3,100
4630	45	FLOCCULANT METERING PUMP 25MM X 25MM	2	EA					1,770.00	3,540			3,540	3,540
4630										6,640			6,640	6,640*
4820	40	FLOCCULANT MIXING TANK 3000MM DIA X 3000MM	2396	KG					4.70	11,261			11,261	11,261
4820	41	MIXER - FLOCCULANT TANK	1	LS						5,300			5,300	5,300
4820	42	ASPIRATOR	1	LS						200			200	200
4820	45	FLOCCULANT STOCK TANK 4500MM DIA X 4500MM	7190	KG					2.80	20,132			20,132	20,132
4820										36,893			36,893	36,893*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 325 - FLOCCULANT														
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								4,350	4,350	4,350
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		192	50	9,600						9,600
49--						192		9,600				4,350	4,350	13,950*
4---						192		9,600		43,533		4,350	47,883	57,483*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		138	50	6,900				4,600	4,600	11,500
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		115	50	5,750				5,750	5,750	11,500
7000	1	INSTRUMENTATION 12% OF INSTALLED MECH.	1	LS		34	50	1,700				5,200	5,200	6,900
8000	1	CREDIT TO MINEWATER TREATMENT AREA (321) OF 34.3%	-1	LS		-992	50	-49,600		-56,349		-6,826	-63,175	-112,775
8000	2	CREDIT TO MILL EFFLUENT TREATMENT AREA (322) OF 65.7%	-1	LS		-1,902	50	-95,100		-107,934		-13,974	-121,908	-216,108
8000						-2,894		-144,700		-164,283		-19,900	-184,183	-328,883*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 325 - FLOCCULANT														
AREA 325 TOTAL										0			0	04

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 326 - NITRIC ACID														
2000	1	BUILDING - INCLUDING EQUIPMENT SUPPORTS & BUILDING SERVICES	3867	CM	1	3,867	50	193,350	50.00	193,350			193,350	386,700
4310	1	NITRIC ACID IN-LINE MIXER (ST/STEEL)	1	LS						1,800			1,800	1,800
4630	30	NITRIC ACID TRANSFER PUMP - 75MM X 38MM (STAINLESS/STL)	1	LS						3,520			3,520	3,520
4630	35	NITRIC ACID DISTRIBUTION PUMP 100MM X 75MM (STAINLESS/STL)	1	LS						4,840			4,840	4,840
4630										8,360			8,360	8,360*
4640	10	NITRIC ACID AREA SUMP PUMP - 50MM (STAINLESS/STL)	1	LS						5,700			5,700	5,700
46--										14,060			14,060	14,060*
4820	30	NITRIC ACID STOCK TANK 4000MM DIA X 4000MM (STAINLESS STL)	5435	KG					5.77	31,360			31,360	31,360

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 326 - NITRIC ACID														
4820	35	NITRIC ACID HOLDING TANK 6500MM DIA X 6500MM (STAINLESS STL)	14140	KG					5.77	81,588			81,588	81,588
4820			19575	KG					5.77	112,948			112,948	112,948*
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								12,880	12,880	12,880
4920	1	FIELD INSTALLATION 22% OF H.O.MATERIAL	1	LS		567	50	28,350						28,350
49--						567		28,350				12,880	12,880	41,230*
4---						567		28,350		128,808		12,880	141,688	170,038*
5000	1	PROCESS PIPING 20% OF INSTALLED MECH.	1	LS		408	50	20,400				13,600	13,600	34,000
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		340	50	17,000				17,000	17,000	34,000
7000	1	INSTRUMENTATION 12% OF INSTALLED MECH.	1	LS		102	50	5,100				15,300	15,300	20,400
8000	1	CREDIT TO MINEWATER TREATMENT AREA (321) OF 50.0%	-1	LS		-2,642	50	-132,100		-161,079		-29,390	-190,469	-322,569

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15

RUN NO. P08

RUN : 30 MAR 84

TIME: 14:51

NUTP WASTE MANAGEMENT COST STUDY MODEL C

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.D. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 326 - NITRIC ACID														
8000	2	CREDIT TO MILL EFFLUENT TREATMENT AREA (322) OF 50.0%	-1	LS		-2,642	50	-132,100		-161,079		-29,390	-190,469	-322,569
8000						-5,284		-264,200		-322,158		-58,780	-380,938	-645,138*
AREA 326 TOTAL										-0			-0	-0*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 331 - TAILINGS LINE														
1800	1	TAILINGS LINE - 100MM DIA. SCH. 80 C.S.LINES (2 REQ'D)	4860	M	.309	1,502	50	75,087	58.20	282,852	6.58	31,979	314,831	389,918
1800	2	TAILINGS LINE - 300MM DIA. SCH 40 C. STL.	2430	M	.782	1,900	50	95,013	189.30	459,999	16.46	39,998	499,997	595,010
1800	3	TAILINGS LINE - 150MM DIA. SCH.40 C.STL.	1670	M	.311	519	50	25,968	64.70	108,049	[illegible]	11,005	119,054	145,023
1800	4	TAILINGS LINE - CONCRETE UTILIDOR C/W CORR.METAL COVER	2430	M	1.95	4,741	50	237,046			97.94	237,994	237,994	475,041
1800	5	TAILINGS LINE FILL MATERIAL	5625	CM							4.40	24,750	24,750	24,750
1800						8,662		433,115		850,900		345,726	1,196,626	1,629,741*
1900	1	CENTRAL SUMP C/W LINER	1	LS						3,500		3,500	7,000	7,000
1---						8,662		433,115		854,400		349,226	1,203,626	1,636,741*
7000	1	INSTRUMENTATION -5%	1	LS		409	50	20,450				61,350	61,350	81,800
AREA 331 TOTAL						9,071		453,565		854,400		410,576	1,264,976	1,718,541*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1900	1	PERMANENT ROADWAYS CLEARING	26000	SM							1.64	42,640	42,640	42,640
1900	2	PERMANENT ROADWAYS FILL MATERIAL	32500	CM							4.40	143,000	143,000	143,000
1900	3	PERMANENT ROADWAYS-GRANULAR SURFACE	1500	CM							4.92	7,380	7,380	7,380
1900	5	POWER SUPPLY LINE	1670	M	.072	120	50	6,012			7.78	12,993	12,993	19,005
1900	10	PUMPHOUSE	36	CM	1.11	40	50	1,998			55.55	2,000	2,000	3,998
1900						160		8,010				208,012	208,012	216,022*
1910	15	TAILINGS POND MOBILIZE & DEMOBILIZE	1	LS								1,200,000	1,200,000	1,200,000
1910	16	TAILINGS POND - CLEARING & GRUBBING	63	HA							15,000	945,000	945,000	945,000
1910	17	TAILINGS POND - EXCAVATE	1200000	CM							2.70	3,240,000	3,240,000	3,240,000
1910	18	TAILINGS POND - BENTONTITE SEAL	9000	TN							240.92	2,168,280	2,168,280	2,168,280

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1910	19	TAILINGS POND - FILTER MATERIAL	460000	CM							3.16	1,453,600	1,453,600	1,453,600
1910	20	TAILINGS POND - COARSE FILTER MATERIAL	4000	CM							20.00	80,000	80,000	80,000
1910	21	TAILINGS POND - EXCAVATE & FILL FOR HAUL ROAD	90000	CM							3.20	288,000	288,000	288,000
1910	22	TAILINGS POND - PLACE FILL MATERIAL	1100000	CM							1.20	1,320,000	1,320,000	1,320,000
1910	23	TAILINGS POND COMPACTION	1	LS		10,500	50	525,000						525,000
1910	24	TAILINGS POND - INSTRU-MENTATION	1	LS								100,000	100,000	100,000
1910	25	TAILINGS POND -MISC. PIPEWORK	1	LS								253,700	253,700	253,700
1910	26	TAILINGS POND - CONCRETE MANHOLES & SUMPS	110	CM							1,164	127,999	127,999	127,999

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 332 - TAILINGS STORAGE BASIN														
1910	27	TAILINGS POND - SUMP ENCLOSURE	1	LS								10,000	10,000	10,000
1910	28	TAILINGS POND - VALVE HOUSE	1	LS								10,000	10,000	10,000
1910						10,500		525,000				11,196,579	11,196,579	11,721,579*
19--						10,660		533,010				11,404,592	11,404,592	11,937,602*
AREA 332 TOTAL						10,660		533,010				11,404,592	11,404,592	11,937,602*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 334 - MONITORING														
1900	1	MONITORING PONDS - CUT MATERIAL	59070	CM							2.70	159,489	159,489	159,489
1900	2	MONITORING PONDS - FILL & PLACEMENT MATERIAL	57137	CM							1.70	97,133	97,133	97,133
1900	3	MONITORING PONDS CLEARING	2	HA							16,375	32,750	32,750	32,750
1900	4	MONITORING PONDS- SAND FILTER BLANKET	3410	CM							2.20	7,502	7,502	7,502
1900	5	MONITORING PONDS - BENTONITE SEAL	40	TN							338.89	13,556	13,556	13,556
1900	6	MONITORING PONDS- 100MIL SYNTHETIC SEAL	10450	SM							20.63	215,584	215,584	215,584
1900	7	MONITORING PONDS - DRAINAGE PIPES	485	M							8.51	4,127	4,127	4,127
1900	8	MONITORING PONDS - MISC. PIPING	1	LS								173,855	173,855	173,855
1900	9	MONITORING PONDS - CONC. VALVA HOUSE,SUMPS,& INSTRUMENTATION	1	LS								70,000	70,000	70,000

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 334 - MONITORING														
1900	10	MOITORING PONDS - PIEZOMETERS	5	EA							1,100	5,500	5,500	5,500
1900												779,495	779,495	779,495*
2000	1	LABORATORY BUILDING	300	SM	10	3,000	50	150,000	500.00	150,000			150,000	300,000
2000	2	CREDIT TO PRODUCTION CAPITAL COST - 70%	-1	LS		-2,100	50	-105,000		-105,000			-105,000	-210,000
2000						900		45,000		45,000			45,000	90,000*
4000	1	LAB EQUIPMENT	1	LS						450,000			450,000	450,000
4000	2	CREDIT TO PRODUCTION CAPITAL COST - 70%	-1	LS						-315,000			-315,000	-315,000
4000										135,000			135,000	135,000*
4640	2	RECYCLE WATER SUMP PUMP 50MM	2	EA					5,135.00	10,270			10,270	10,270
4640	3	MOTOR - 40HP	2	EA					2,200.00	4,400			4,400	4,400
4640										14,670			14,670	14,670*
4650	5	RECYCLE WATER PUMPS 150MM X 100MM	2	EA					3,860.00	7,720			7,720	7,720

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 334 - MONITORING														
4650	6	MOTOR - 50HP	2	EA					2,900.00	5,800			5,800	5,800
4650										13,520			13,520	13,520*
46--										28,190			28,190	28,190*
4820	4	RECYCLE WATER PUMP BOX 2500MM DIA. X 3500MM	1700	KG					4.70	7,990			7,990	7,990
4910	1	FIELD MATERIAL - 10% OF H.O.MATERIAL	1	LS								17,100	17,100	17,100
4920	1	MECHANICAL INSTALLATION 22% OF H.O.MATERIAL	1	LS		753	50	37,650						37,650
49--						753		37,650				17,100	17,100	54,750*
4---						753		37,650		171,180		17,100	188,280	225,930*
5000	1	PROCESS PIPING - 20% OF INSTALLED MECH.	1	LS		542	50	27,100				18,100	18,100	45,200
6000	1	ELECTRICAL 20% OF INSTALLED MECH.	1	LS		452	50	22,600				22,600	22,600	45,200

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 334 - MONITORING														
7000	1	INSTRUMENTATION 12% OF INSTALLED MECH.	1	LS		136	50	6,800				20,300	20,300	27,100
AREA 334 TOTAL						2,783		139,150		216,180		857,595	1,073,775	1,212,925*

CLSS	ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
AREA 900 - CONST.INDIRECTS,E.P.C.M., & CONTINGENCY														
9100	1	CONSTRUCTION INDIRECTS	1	LS		28,400	50	1,420,000				1,420,100	1,420,100	2,840,100
9200	1	ENGINEERING, PROCUREMENT AND CONSTRUCTION MANAGEMENT	1	LS						4,260,100			4,260,100	4,260,100
9300	1	SPARE PARTS - 5% OF H.O. MATERIAL	1	LS						731,150			731,150	731,150
9900	1	CONTINGENCY	1	LS		20,103	50	1,005,150		1,535,420		1,792,615	3,328,035	4,333,185
9---						48,503		2,425,150		6,526,670		3,212,715	9,739,385	12,164,535*
AREA 900 TOTAL						48,503		2,425,150		6,526,670		3,212,715	9,739,385	12,164,535*

KILBORN (SASKATCHEWAN) LTD.

ESTIMATE DETAILS

PROJECT: S239-15
NUTF WASTE MANAGEMENT COST STUDY MODEL C

RUN NO. P08

RUN : 30 MAR 84
TIME: 14:51

CLSS ITM	DESCRIPTION	QUAN	UN	UNIT MHRS	TOTAL MNHRS	MH RT	TOTAL LABOR	-- H.O. MATERIAL -- UNT CST	TOTAL	- FIELD MATERIAL - UNT CST	TOTAL	TOTAL MAT'L	TOTAL COST
TOTAL DIRECTS					221,137		11,056,829		16,889,595		19,718,768	36,608,363	47,665,192*
TOTAL DIRECTS AND INDIRECTS					221,137		11,056,829		16,889,595		19,718,768	36,608,363	47,665,192*
CONTINGENCY													0*
PROJECT TOTAL					221,137		11,056,829		16,889,595		19,718,768	36,608,363	47,665,192*

POOR

QUALITY

ORIGINAL